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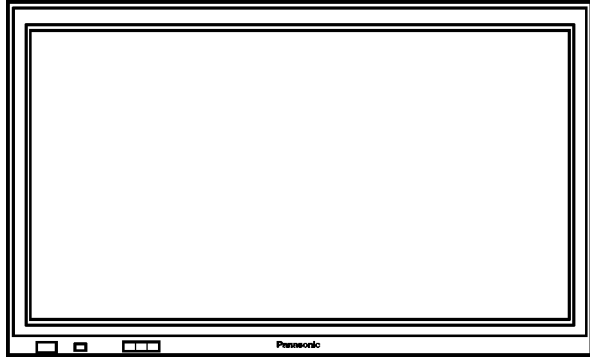
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Service Manual

Wide Plasma Display



TC-42P1	TC-37P1
TC-42P1F	TC-37P1F
TC-42PD1	TC-37PD1
TC-42PD1F	TC-37PD1F
PT-42P1	PT-37P1
PT-42PD1	
TC-42P1FA	
TC-42PD1FA	

GP2D Chassis

Specifications

Power Source:

PT models: 120V AC, 50/ 60Hz
TC models: 220-240V AC, 50/60 Hz

Power Consumption:

42 inch model	37 inch model
380W	290W
Stand-by condition: 1.7W	Standby-condition: 1.7W
Power off condition: 0.7W	Power off condition: 0.7W

Plasma Display panel:

42 inch model	37 inch model
42-inch, 16:9 AC type	37-inch, 16:9 AC type

Screen size:

42 inch model	37 inch model
920mm(W) x 518mm(H) x 1056mm(diagonal)	818mm(W) x 461mm(H) x 939mm(diagonal)
No. of pixels	No. of pixels
408,960(852 (W) x 480 (H)) [2,556 x 480 dots]	408,960(852 (W) x 480 (H)) [2,556 x 480 dots]

Operating conditions:

Temperature: 0°-40°C
Humidity: 20%-80%

Applicable signals

Colour System: NTSC, PAL, PAL-60, SECAM
Scanning format: 525i, 525p, 625i, 625p, 1080i
PC signals: VGA, S-VGA (compressed), Horizontal scanning frequency 15.6-50 kHz

Connection terminals:

AV	VIDEO IN (BNC)	1.0V p-p (75Ω)
S-VIDEO IN	Y: 1V p-p (75Ω), (Mini DIN 4-pin)	C: 0.286V p-p (75Ω)
AUDIO IN L-R	0.5Vrms (RCA pin jack x 2)	
VIDEO OUT (BNC)	1.0V p-p (75Ω) (bridge output)	
COMPONENT /RGB	Y/G1.0V p-p (including synchronization)	
	Pb/B	±0.35V p-p
	Pr/R	±0.35V p-p
	HD	±1.0-5.0V p-p
	VD	±1.0-5.0V p-p
AUDIO IN L-R	0.5Vrms (RCA pin jack x 2)	
PC	VIDEO (High-density D-sub 15pin)	
	AUDIO 0.5Vrms (3mm mini jack)	
SPEAKERS (8Ω)	For TY-SP42PD1E. (For 42 inch model only)	
SERIAL	For TY-SP37PD1E. (For 37 inch model only)	
TUNER	External control terminal	
REMOTE		

Dimensions (W x D x H):

42 inch model	37 inch model
1030mm x 633.5mm x 89mm	930mm x 573.5mm x 89mm

Weight (Mass):

42 inch model	37 inch model
33.0kg net (main unit only)	27.5kg net (main unit only)
36.4kg (with speakers)	30.7kg (with speakers)

Note:

Design and Specifications are subject to change without notice.
Weight and Dimensions shown are approximate.

WARNING

This service literature is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service literature by anyone else could result in serious injury or death.

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Plasma Display Technology

Plasma display panel

	CRT	PDP
Scan	Dot Sequence	Line Sequence
	Interlace/ Progressive	Progressive
Emission	Dot Sequence	Simultaneous
Phosphor Excitation	Electron	Ultra Violet Lay
Brightness Control	Beam Current control	Discharge Time control (Sub-Filed Drive)

Fig. A

Panasonic 37/42 inch wide plasma display panel is developed for large screen multimedia display with space saving.

The plasma display panel use AC type Sub-field drive system with Dual scanning system. This panel have also Panasonic original Asymmetric cell and Plasma AI technology.

Fig. A is the CRT and Plasma Display Panel (PDP) comparison chart.

Plasma display panel structure

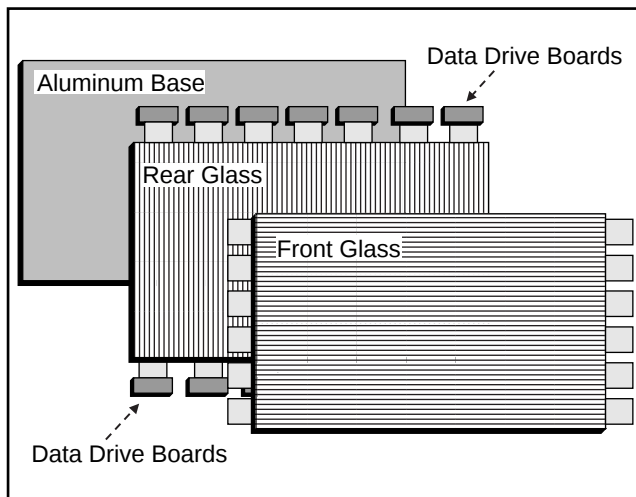


Fig. B

Plasma display panel structure.

Panasonic Plasma display panel is consist of front glass, rear glass and Aluminum base.

The front glass has each 480 lines scan and sustain transperence electrodes.

The rear glass has 2556 (852 x 3) data electrodes on the inner surface. These electrodes are connected to the data drive circuit boards directly.

Rear Glass Structure

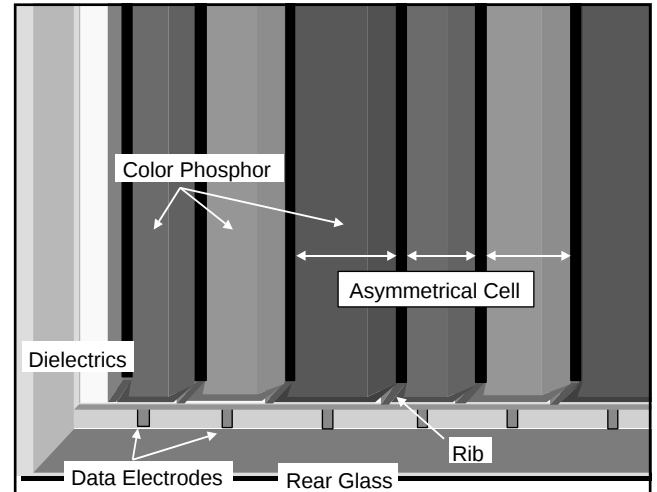


Fig. C

On the rear glass the data electrode is mounted.

The dielectric is coated on the rear glass.

Red, Green and Blue color phosphors are formed on the data electrode with the ribs. However to improve color reproduction and brightness, each color phosphors are formed different width This is called " Asymmetrical cell " as Panasonic original technology.

Front Glass Structure

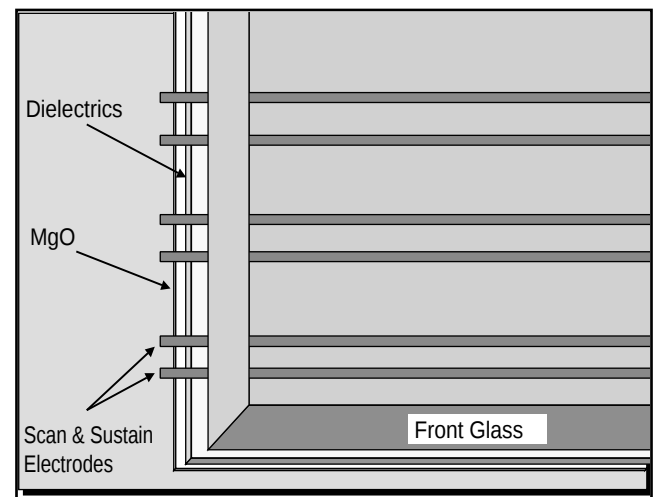


Fig. D

On the front glass scan and sustain transparent electrodes are mounted in pair.

The dielectrics is coated on the front grass.

MgO over coat is also applied on the dielectrics.

The front and rear glasses are piled and sealed . And low presser gas are charged between two glasses.

Pixel Structure

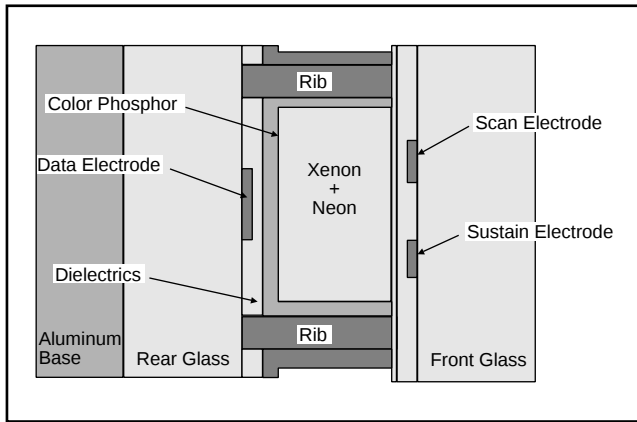


Fig. E

37/42 inch plasma display panel has 1,226,880 pixels. Each pixel's structure is shown in Fig. E.

Sub Field Drive system

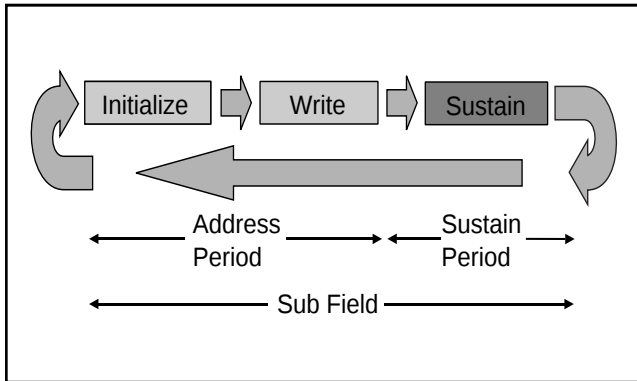


Fig. F

Brightness control of plasma display panel is carried out by plasma discharge time change. To control each pixel's brightness, the Sub-field drive system is used. A sub-field consists of Initialize, Write, and sustain operation.

Initialization

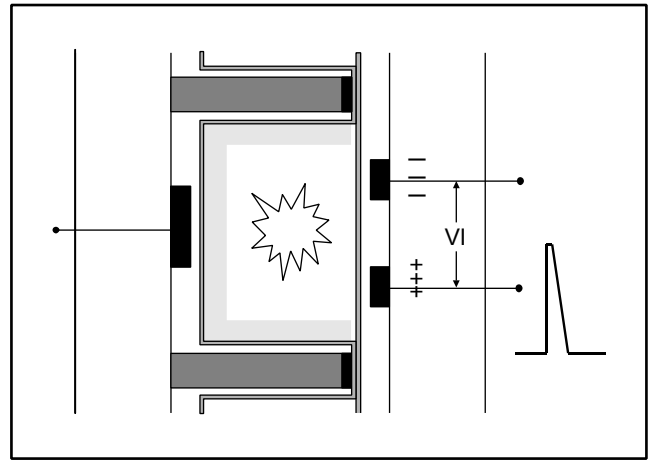


Fig. G

To clear any remaining electric charge into the pixel, a trapezoidal voltage is applied between the scan and sustain electrodes. Plasma discharge is started but the discharge becomes small gradually. Then any electric charge is cleared.

Write

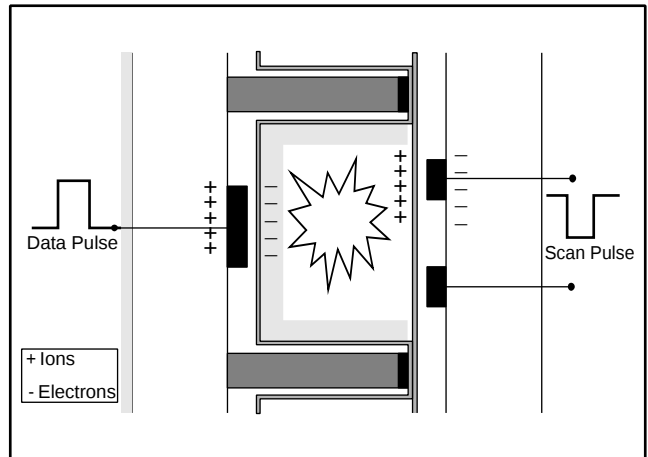


Fig. H

Data Pulse which is positive polarity is input to the data electrode and Scan pulse which is negative polarity is input to the scan electrode simultaneously. That means the sum of data and scan pulses voltage is applied between the two electrodes as the discharge start voltage. Discharge is started into the pixel and gas is ionized. During discharging, ions are charged on the scan electrode side and electrons are charged on the data electrode side.

Wall Voltage

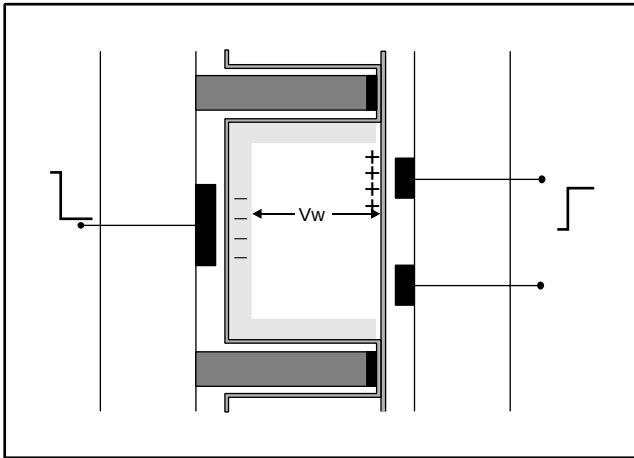


Fig. I

when input pulses are stopped, Ions and Electrons which are charged on the dielectric around the electrodes are remained.

This charge is called Wall Voltage (Pilot voltage).

This operation is called Write .

Sustain Step 2

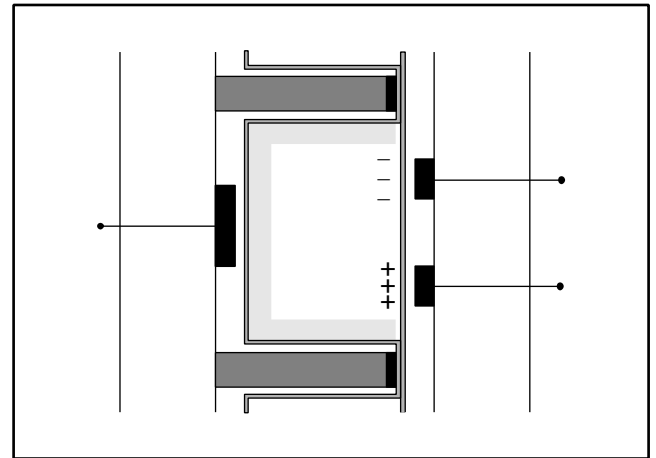


Fig. K

When sustain pulse is stopped, Ions and Electrons are remained again as Wall voltage. However polarity of wall voltage is reversed.

Sustain Step 1

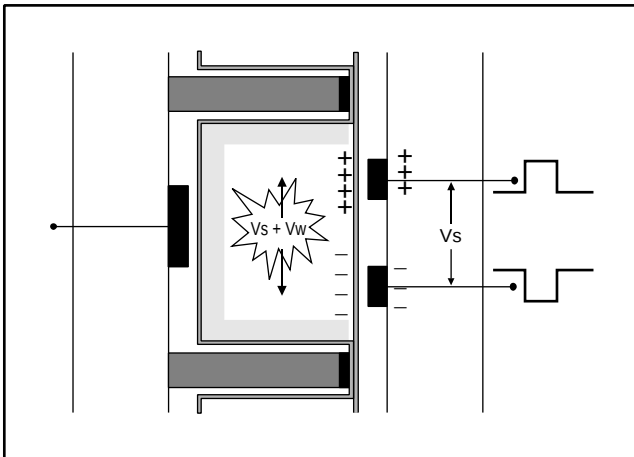


Fig. J

Negative polarity's Sustain pulse is input between sustain and scan electrodes and voltage potential between two electrodes becomes sum of Sustain pulse and wall voltage. Then discharge start.

Sustain Step 3

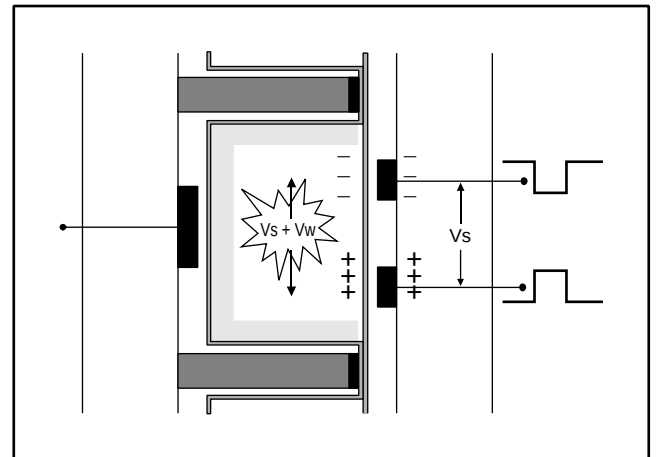


Fig. L

Positive polarity's Sustain pulse is input between sustain and scan electrodes and discharge start again.

Sustain Step 4

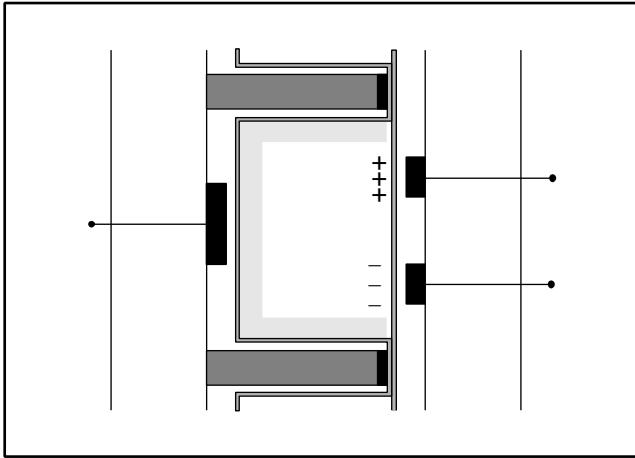


Fig. M

When sustain pulse is stopped, Ions and Electrons are remained again as Wall voltage. However polarity of wall voltage is reversed.

Repeat Step 1 to Step 5

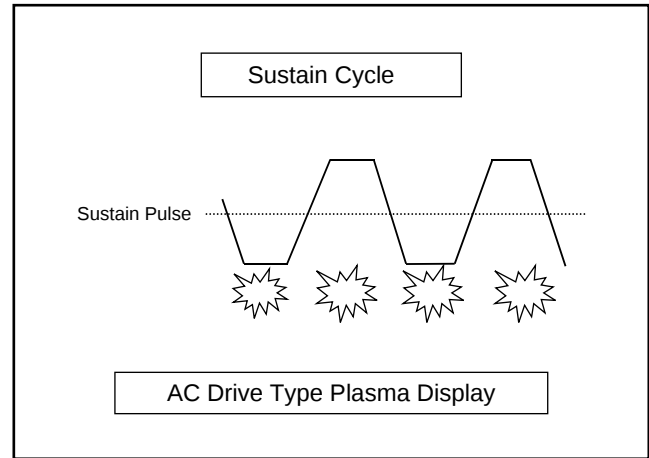


Fig. O

To keep discharge continuously step 1 to 5 operation will be repeated.

As the result sustain pulse is alternated. Therefore we call this drive system AC Drive type.

If sustain operation is repeated longer, brightness level of the pixel is increased. Therefore depend on sustain discharge time brightness of pixel is controlled.

Sustain Step 5

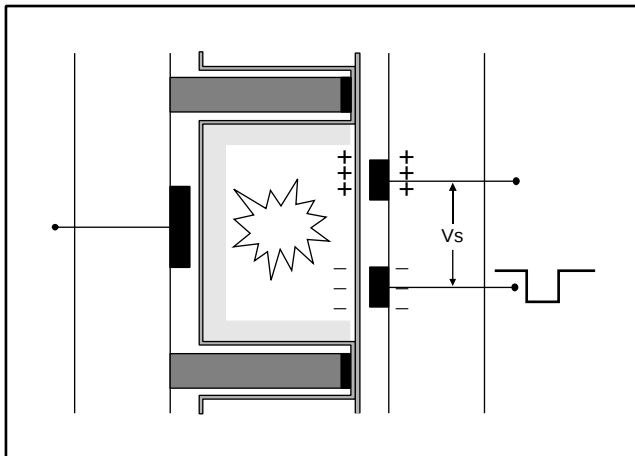


Fig. N

Ions and Electrons which is generated by 2nd sustain discharge are charged on the pixel wall (dielectric) around the electrodes.

Sub-Field drive

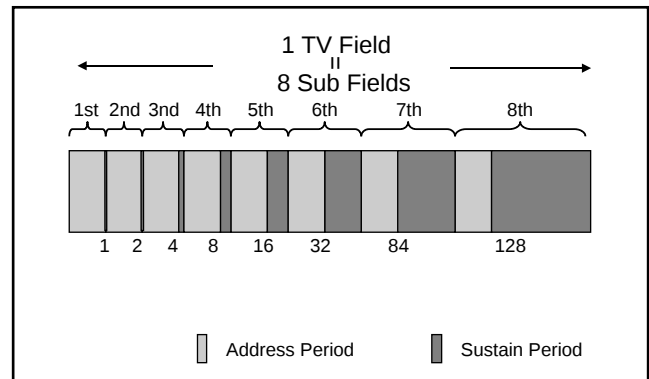


Fig. P

Sub-Field drive is PDP unique system.

While one TV field period, 8 bits digital video signal component is reproduced by 8 sub-fields operation.

Each Sub-Field's address period are all same.(Consist of one initialization and 480 scanning operation.)

But Sustain period of each Sub-Field are different.

1st Sub-Field (SF) reproduce only 1 step brightness.

2nd SF reproduce 2 steps brightness.

Each sub-field's sustain period are increased gradually.

However total 256 brightness difference can be reproduced on the screen.

Dual Scan

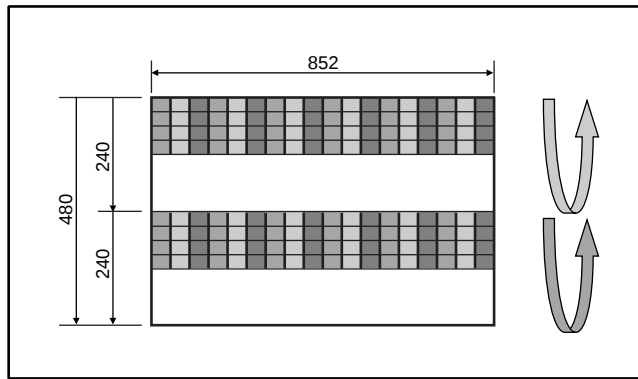


Fig. Q

The sustain period of sub-field drive system. Therefore brightness peak is limited. Because 480 horizontal lines scanning is carried out during address period.

Dual scan system can reduce scanning time from 480 to 240 in the address period.

Then spaced time by dual scanning can be used for sustain operation.

As the result Brightness peak level can be increased.

Plasma AI (Adaptive brightness Intensifier)

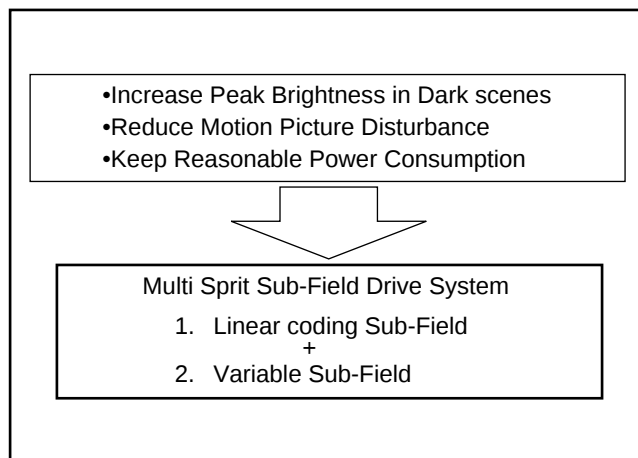


Fig. R

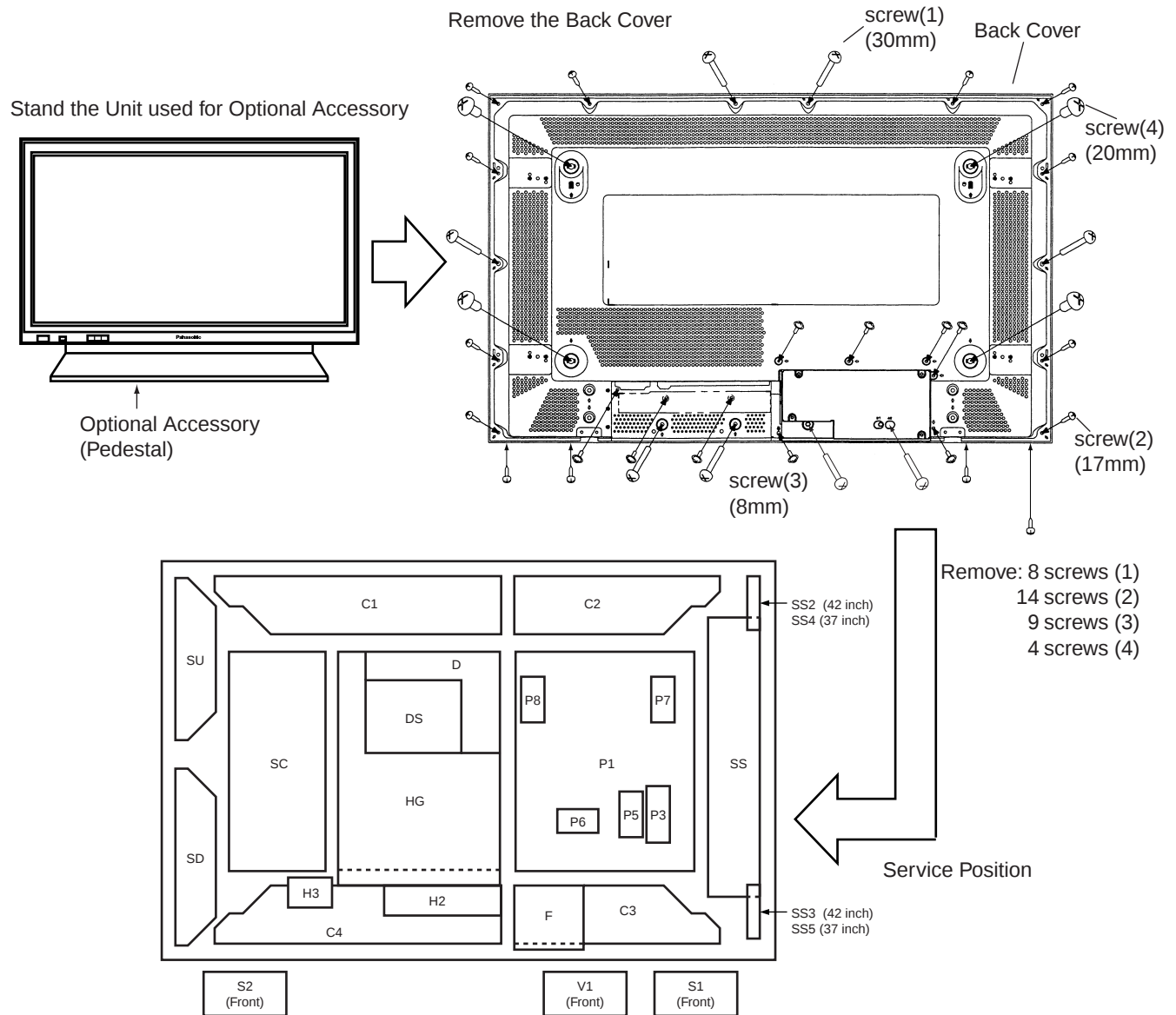
Panasonic plasma AI control sub-field drive operation which is called Multi-Sprit Sub-Field drive control system is used.

Depend on the picture contents (APL : Average Picture Level) number of sub-field are changed from 10 to 12. (Variable Sub-field)

Sustain time format of each sub-field are also rearranged from binary format to linear coding sustain time. (Linear coding sub-field)

Plasma AI select the best display condition for Plasma display panel to display natural and crisp picture.

Service Hint



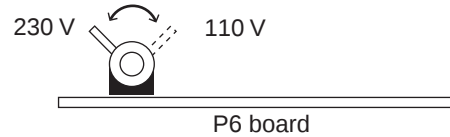
Board name	Function	Board name	Function
DS module	I/P Converter	V1 board	Front Switch
HG board	Interface	S1 board	Power Switch & Remote Receiver
D board	Digital process & Control	S2 board	Factory use
P1 board	Power supply	P3 board	Sustain voltage control
SC board	Scan drive	P5 board	Processing voltage control
SS board	Sustain Drive	P6 board	Prinaly voltage control
C1 board	Data drive (Upper Left)	P7 board	Sustain voltage protection
C2 board	Data drive (Upper Right)	P8 board	Processing voltage protection
C3 board	Data drive (Lower Right)	H2 board	PC input terminal
C4 board	Data drive (Lower Left)	F board	Line filter
SU board	Scan out (Upper)	H3 board	Speaker terminal
SD board	Scan out (Lower)	SS2 board	Sustain connection (Upper)
SS4 board	Sustain connection (Upper)	SS3 board	Sustain connection (Lower)
SS5 board	Sustain connection (Lower)		

Adjustment Procedure

Item / Preparation

+B Set-Up

1. Confirm the main voltage set switch is set to 110V (PT models)/ 230V (TC models)



Note: 230V covers input AC voltage from 200V till 265V, and 110V covers from 90V till 130V.

2. Input a Grey scale signal.
3. Set the picture controls: -
 - Picture mode Normal
 - White balance Normal

Adjust and confirm indicated test point for the specified voltage

Confirmation (cold)

Test Point	Voltage	Volume	Name
P4 pin 1 (Hot)	400 V $\pm$ 1 V	R548	PFC
P1 pin 10	15 V $\pm$ 0.5 V		+15 V
P5 pin 1	13 V $\pm$ 0.5 V		+13 V
P6 pin 1	13 V $\pm$ 0.5 V		Audio 13 V
P6 pin 3	-13 V $\pm$ 0.5 V		Audio -13 V
P5 pin 5	5 V $\pm$ 0.5 V		+5 V
P5 pin 8	3.4 V $\pm$ 0.5 V		+3.3 V
P7 pin 1	14 V $\pm$ 1 V		STB 14V
P7 pin 6	5 V $\pm$ 0.5 V		STB 5 V

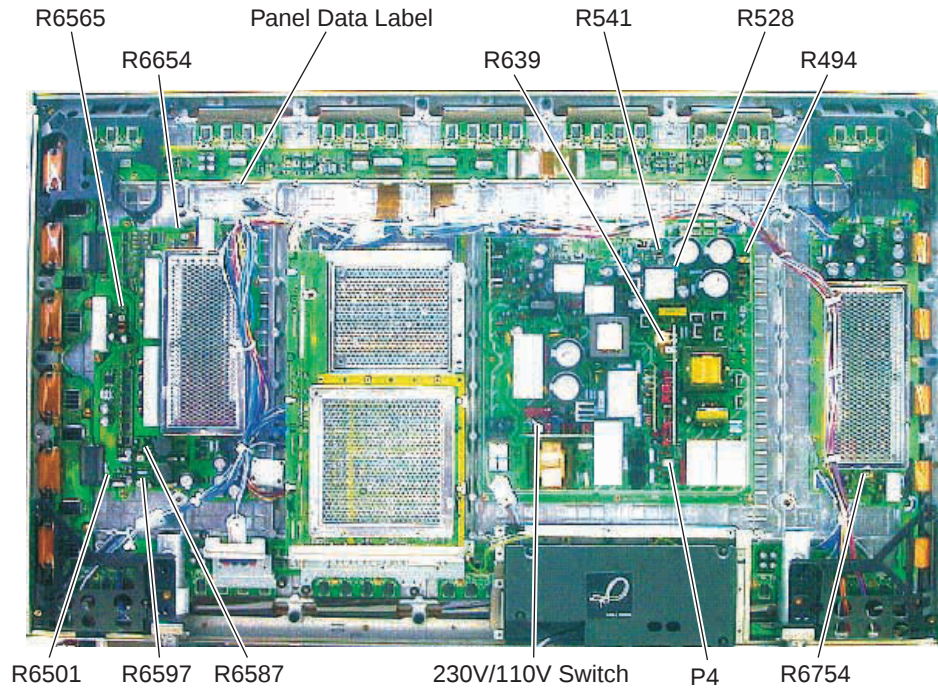
Driver Set-Up

4. Input an APL 100 % white signal.
5. Set the picture controls: -
 - Picture mode Normal
 - White balance Normal

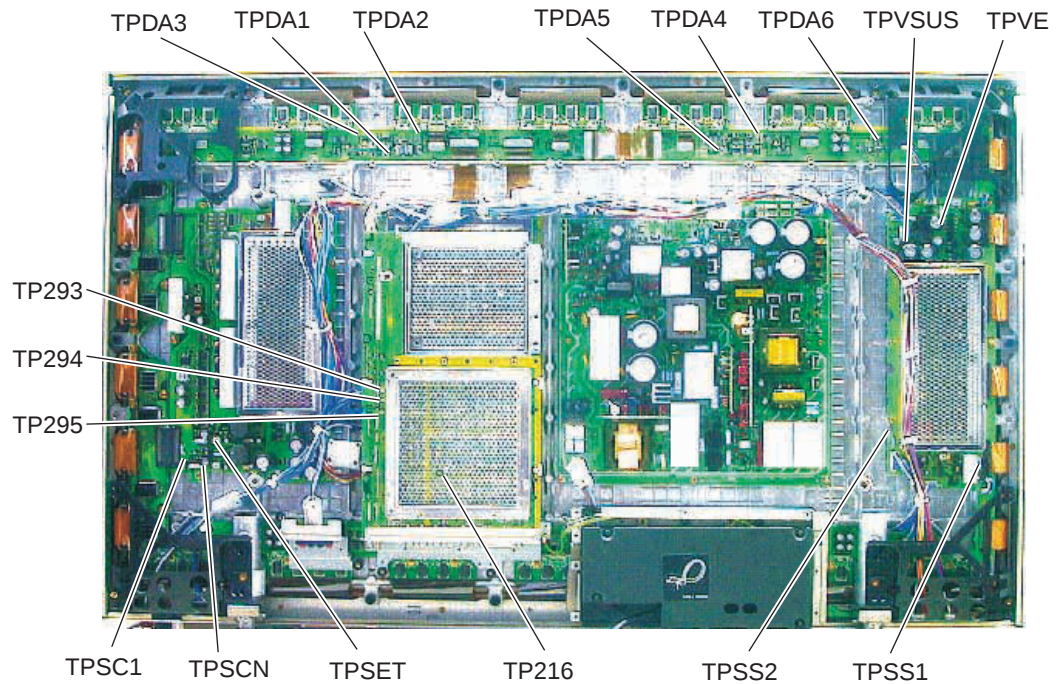
Adjust driver section voltages referring panel data on the panel data label.

Test point	Voltage	Volume	Name
TPDA1(C1)	75 V $\pm$ 0.5 V	R528(P1)	VDA
TPVSUS(SS)	VSUS $\pm$ 1 V	R639(P3)	VSUS
TPVSET(SC)	VSET $\pm$ 1 V	R6587(SC)	VSET
TPVSCN(SC)	80 V $\pm$ 0.5 V	R6597(SC)	VSCN
TPVE(SS)	VSUS + VE $\pm$ 0.5 V	R494(P1)	VE
P5 pin3	3 V $\pm$ 0.2 V	R541	ABL

Adjustment Volume Location



Test Point Location



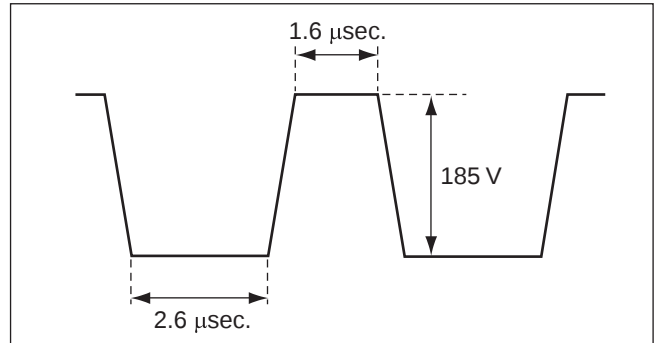
Sustain Pulse Adjust

1. Input a Cross hatch signal.
2. Set the picture controls: -

Picture mode	Normal
White balance	Normal

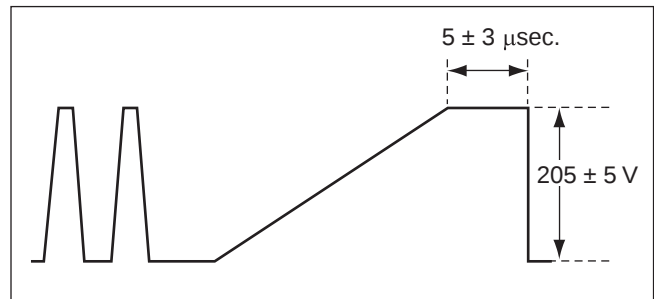
Confirm the indicated test point for the specified wave form.

Test Point	Volume	Name
TPSS1(SS)		Sustain Pulse



Adjust the angle of the erase pulse.

Test Point	Volume	Name
TPSS1(SS)	R6754(SS)	Erase Pulse



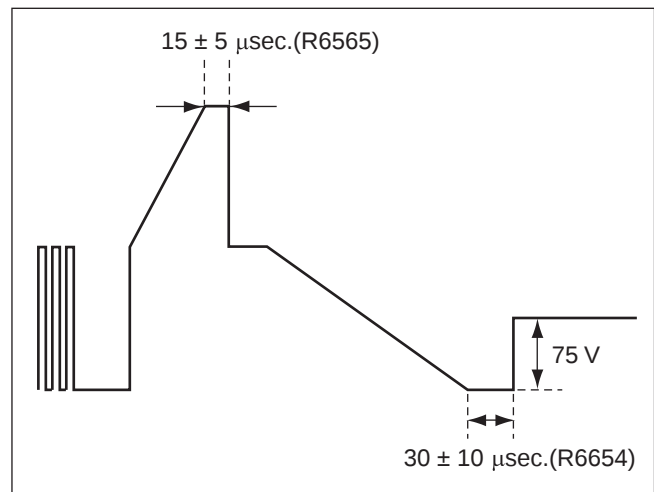
Initialization Pulse Adjust

1. Input a Cross hatch signal.
2. Set the picture controls: -

Picture mode	Normal
White balance	Normal

Adjust the indicated test point for the specified wave form.

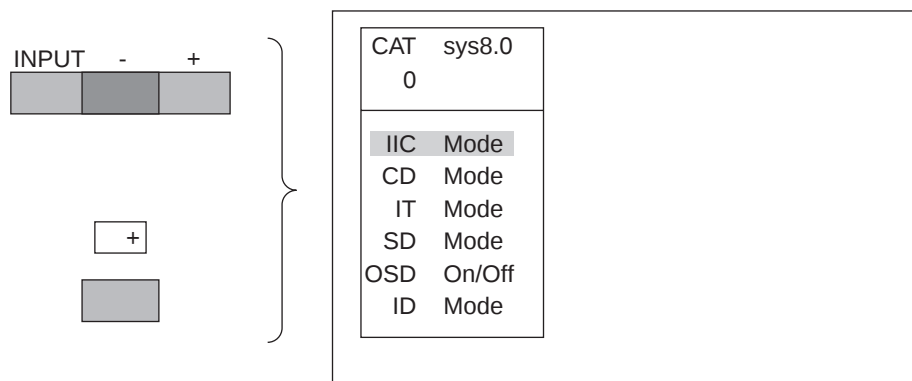
Test Point	Volume	Name
TPSC1 (SC)	R6565(SC)	Initialize Pulse
TPSC1 (SC)	R6654(SC)	Initialize Pulse



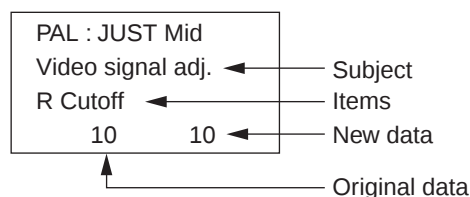
Alignment Setting

How to access Alignment

- 1) Press and hold the **volume down / -** button on the front panel of the unit and press the **Recall (PT models)/ Status (TC models)** [ **+**] button on the remote control 3 times quickly within 1 second, this will place the unit into the CAT menu (Main service mode).



- 2) Press the **ACTION (PT models)/ STR (TC models)** button on the remote control.



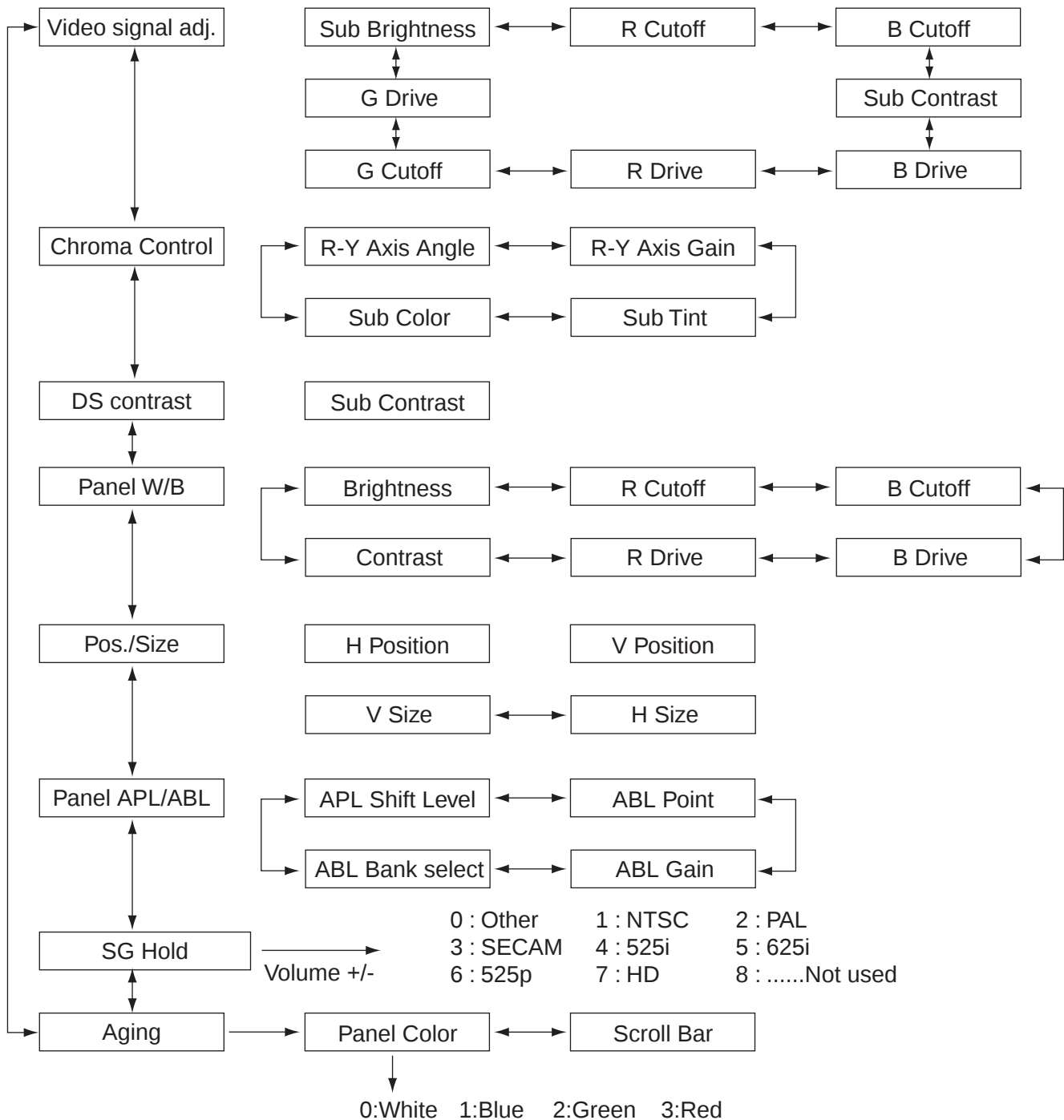
- 3) Select the alignment Subject by the **UP** or **DOWN** button of the Cross buttons on the remote control.
- 4) Select the alignment item by the **LEFT** or **RIGHT** buttons of the Cross buttons on the remote control.
- 5) Adjust optimum setting by **Volume Up / +** and **Down / -** buttons.
 (The reference figures below are normal and used for representative purpose only.)

Exit

- 6) To exit the **IIC mode**, press the **menu** button on the remote control.
 To exit the **CAT mode**, access the **ID mode** by the down button of cross buttons and switch off the main power and on again.

IIC menu structure

	Subject	Item
Access Button	UP/Down of Cross buttons	Left/Right of Cross buttons



Alignment

(The reference figures below are normal and used for representative purpose only.)

DS contrast

- 1) Input 1 Vp-p NTSC (PT models)/ PAL (TC models) color bar signal into the Video in terminal.
- 2) Access the DS contrast mode and align as follow.

Alignment Item	Reference	Setting/Special feature
Sub Contrast	66	0.7V pedestal-peak on TP216.

Video signal setting

- 1) Input 1Vp-p NTSC (PT models)/ PAL (TC models) color bar signal into the Video in terminal.
- 2) Set Picture mode to Normal mode and Manual W/B to Cool position.
- 3) Access the Video signal Adj. Mode and set each Item as follow.

Alignment Item	Reference	Setting /Special feature
Sub Brightness	80	Fixed data
R Cutoff	40	Fixed data
B Cutoff	40	Fixed data
Sub Contrast	63	Set the signal on TP294 to 0.7V pedestal-peak.
R Drive	71	Set the signal on TP293 to 0.7V pedestal-peak.
B Drive	71	Set the signal on TP295 to 0.7V pedestal-peak.
G Cutoff	80	Fixed data
G Drive	20	Fixed data

- 4) Record the setting data of Sub contrast, R Drive and B Drive.

**Data 1

Sub Contrast	R Drive	B Drive

- 5) Access the SG Hold mode (Forced signal system set mode) and set the system to NTSC (PT models)/ PAL (TC models).
- 6) Return to the Video signal adj. mode and copy the Data 1 for each item.
- 7) Repeat item 5) and 6) for SECAM, 525i, 625i and 525p system.

Chroma Control

- 1) Access the Chroma Control Mode and set each Item as follow.

Alignment Item	Reference	Setting/Special feature
R-Y Axis Angle	E	Fixed data
R-Y Axis Gain	2E	Fixed data
Sub Tint	47	Optimum setting
Sub Color	30	Optimum setting

- 2) Record the setting data of Sub Tint and Sub Color.

**Data 2

Sub Tint	Sub Color

- 3) Access the SG Hold mode (Forced signal system set mode) and set the system to NTSC (PT models)/ PAL (TC models).
- 4) Return to the Chroma Control mode and copy the Data 2 for each item.
- 5) Repeat item 3) and 4) for SECAM and 525i system.
(Sub color data for SECAM system should be reduced 5 steps from data 2.)

Panel W/B (PD1 models only)

Composite/Component signals

- 1) Change to the AV input mode and input the NTSC (PT models)/ PAL (TC models) white pattern signal.
- 2) Set the manual W/B to Cool by the **Menu** button.
- 3) Access the Panel W/B mode and align the white balance (Slightly bluish white)

Alignment Item	Reference Cool (Hi)	Setting/Special feature
Brightness	71	Optimum setting
R Cutoff	8F	Optimum setting
B Cutoff	87	Optimum setting
B Drive	82	Optimum setting
R Drive	64	Optimum setting
Contrast	84	Optimum setting

Manual W/B	R Cutoff	B Cutoff	B Drive	R Drive
Cool (High)				
Normal (Mid)				
Warm (Low)				

- 4) Change the Manual W/B to Normal by the **Menu** button, and set the white balance data by Increasing the R Drive data 24 steps and reducing the B drive data 2 steps, B Cutoff 1 step from Cool mode data.
- 5) Change the Manual W/B to Warm by the **Menu** button, and set the white balance data by Increasing the R Drive data 30 steps and reducing the B drive data 35 steps, B cutoff 2 step from Cool mode data.
- 6) Access the SG Hold mode (Forced signal system set mode) and set the system to NTSC (PT models)/ PAL (TC models).
- 7) Return to the Panel W/B mode and copy the Data 3 for each item.
- 8) Repeat item 6) and 7) for 525i, 625i and SECAM system.

PC/RGB signal

- 1) Change to the PC input mode and input the PC signal.
- 2) Set the manual W/B to Cool by the **Menu** button.
- 3) Access the Panel W/B mode and align the white balance (Slightly bluish white).

	Reference Cool (Hi)	Setting/Special feature
Brightness	66	Optimum setting
R Cutoff	91	Optimum setting
B Cutoff	85	Optimum setting
B Drive	6A	Optimum setting
R Drive	74	Optimum setting
Contrast	84	Optimum setting

- 4) Change the Manual W/B to Normal by the **Menu** button, and set the white balance data by Increasing the R Drive data 34 steps and reducing the B drive data 2 steps from Cool mode.
- 5) Change the Manual W/B to Warm by the **Menu** button, and set the white balance data by Increasing the R Drive data 47 steps and reducing the B drive data 31 steps, R cutoff and B cutoff 1 step from Cool mode.}

Pos./Size setting

- 1) Receive the test pattern signal which can be found the center and edge position and align properly.

Alignment Item	Reference	Setting /Special feature
H Position	9A	Optimum setting
V Position	C3	Optimum setting
H Size	A8	Optimum setting
V Size	5E	Optimum setting

Panel W/B (P1 models only) Composite/Component signal

Equipment	NTSC (PT models)/ PAL (TC models) signal generator Color meter
-----------	--

- 1) Set the AV mode and input the white pattern signal from NTSC (PT models)/ PAL (TC models) signal generator.
- 2) Press the **Menu** button twice to access main menu and set the manual W/B to Cool.
- 3) Access the Panel W/B mode and align the Low Light and High Light shown below by using color meter.

	x	y
Cool (High)	0.272	0.290
Normal (Mid)	0.288	0.296
Warm (Low)	0.313	0.329

Alignment Item	Reference Cool (Hi)	Setting/Special feature
Brightness	71	10cd/m ² by 15% signal level (Set by generator)
R Cutoff	7F	Set to 15% signal level by the generator.
B Cutoff	7D	Set 15% signal level by the generator.
B Drive	75	Set 75% signal level by the generator.
R Drive	62	Set 75% signal level by the generator.
Contrast	84	Optimum setting

- 4) Record R Cutoff, B Cutoff, R Drive and B Drive setting data.(***Data 3)

Manual W/B	R Cutoff	B Cutoff	B Drive	R Drive
Cool (High)				
Normal (Mid)				
Warm (Low)				

- 5) Change the Manual W/B to Normal by the **Menu** button and **ACTION (PT models)/ STR (TC models)** button.
- 6) Modify the Data as follows.
Increase R Drive 24 steps and reduce B drive 2 steps and B cutoff 1 step from Cool mode.
- 7) Change the Manual W/B to Warm by the **Menu** button and **ACTION (PT models)/ STR (TC models)** button.
- 8) Modify the Data as follows.
Increase R Drive 30 steps and reduce B drive 35 steps, and B cutoff 2 steps from Cool mode.
- 9) Access the SG Hold mode (Forced signal system set mode) and set the system to NTSC (PT models)/ PAL (TC models).
- 10) Return to the Panel W/B mode and copy the Data 3 for each item.
- 11) Repeat item 9) and 10) for SECAM system.

PC / RGB signal (P1 models only)

Equipment	RGB signal generator Color meter
-----------	----------------------------------

- 1) Set the PC mode and input the white pattern signal from RGB signal generator.
- 2) Press the **Menu** button twice to access main menu and set the manual W/B to Cool.
- 3) Access the Panel W/B mode and align the Low Light and High Light shown below by using color meter.

	x	y
Cool (High)	0.272	0.290
Normal (Mid)	0.288	0.296
Warm (Low)	0.313	0.329

Alignment Item	Reference Cool (Hi)	Setting/Special feature
Brightness	66	10cd/m ² by 15% RGB signal (Set by generator)
R Cutoff	91	Set to 15% RGB signal level by the RGB generator.
B Cutoff	85	Set 15% RGB signal level by the RGB generator.
B Drive	6A	Set 75% RGB signal level by the RGB generator.
R Drive	74	Set 75% RGB signal level by the RGB generator.
Contrast	84	Optimum setting

- 4) Record R Cutoff, B Cutoff, R Drive and B Drive setting data.(***Data 5)

R Cutoff	B Cutoff	B Drive	R Drive

- 5) Change the Manual W/B to Normal by the **Menu** button and **ACTION (PT models)/ STR (TC models)** button.
- 6) Modify the Data as follows.
Increase R Drive 34 steps and reduce B drive 2 steps from Cool mode.
- 7) Change the Manual W/B to Warm by the **Menu** button and **ACTION (PT models)/ STR (TC models)** button.
- 8) Modify the Data as follows.
Increase R Drive 47 steps and reduce B drive 31 steps, and R cutoff and B cutoff 1 steps from Cool mode.

Pos./Size setting (P1 models only)

- 1) Receive the test pattern signal which can be found the center and edge position and align properly.

Alignment Item	Reference	Setting/Special feature
H Position	9A	Optimum setting
V Position	C3	Optimum setting
H Size	A8	Optimum setting
V Size	5E	Optimum setting

Panel APL / ABL

- 1) Confirm each data.

Alignment Item	Reference	Setting/Special feature
APL Shift Level	E2	Confirmation only
ABL Point	10	Confirmation only
ABL Gain	E0	Confirmation only
ABL Bank Select	3F	Confirmation only

SG Hold

SG Hold is the alignment tool for data copy function. Color/Signal system can be set regardless of input signal.

Aging

Aging mode is internal pattern generator for panel setting confirmation and the image retention removal.

Panel Color

There are 4 color pattern White, Red, Blue and Green.

- 1) Access desired color pattern by the **Volume Up** or **Down** button on the remote control and press the **ACTION (PT models)/ STR (TC models)** button.
- 2) To exit, press **Menu** button.



< Scroll Bar >

Scroll Bar

Scroll bar is for the image retention removal.

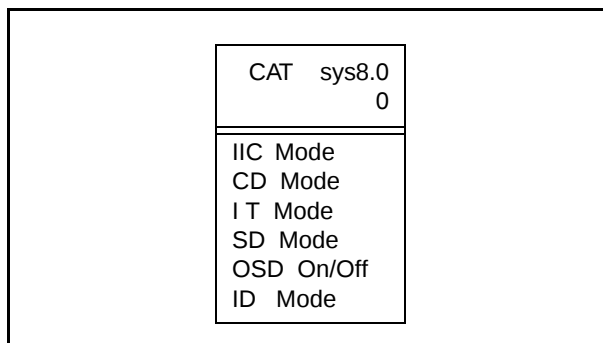
Display scroll bar approximately 15 minutes after alignment is completed.

- 1) Access the Scroll bar menu by **Left** or **Right** button of cross button and press the **ACTION (PT models)/ STR (TC models)** button.
- 2) To exit, press the **Menu** button.

Note:

CAT (Computer Aided Test) mode

Mode	Function	Access button
IIC	Service Alignment	ACTION (PT models)/ STR (TC models)
CD (Complete Diagnostics)	Software version information EEP ROM edit	MUTE
IT (Integrated Text)	Not used	
SD (Status Display)	Factory use	
OSD on/off	OSD display switch	MUTE
ID (Initial Data)	Not used	



Self Check

Display Indication

1. Self-check is used to automatically check the bus line controlled circuit of the Plasma display.
2. To get into the Self-check mode press the volume down button on the customer controls at the front of the set, at the same time pressing the **SLEEP (PT models)/ OFF-TIMER (TC models)** button on the remote control, and the screen will show : -

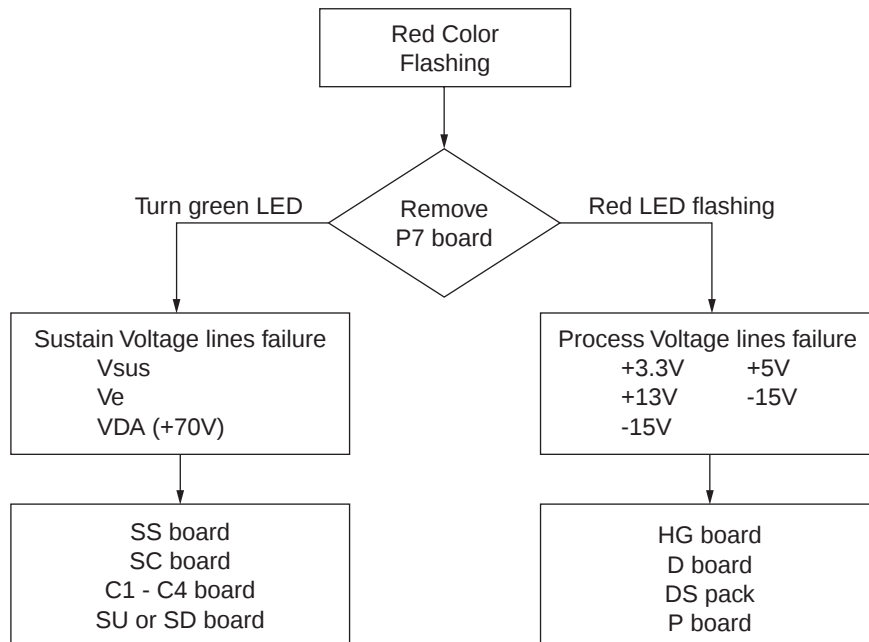
If the CCU ports have been checked and found to be incorrect or not located then "--" will appear in place of "OK".

ID	IIC1	IIC2
HG	IC2401 OK H21	IC8501 OK H51
		IC8516 OK H52
		IC8506 OK H53
		IC8509 OK H54
DS	IC8002 OK H55	IC8004 OK H51
	IC8013 OK H57	IC8010 OK H59
	IC8007 OK H58	
D	IC9100 OK H60	
	IC9210 OK H61	
	IC9410 OK H62	
	IC9801 OK H63	
	IC9804 OK H91	

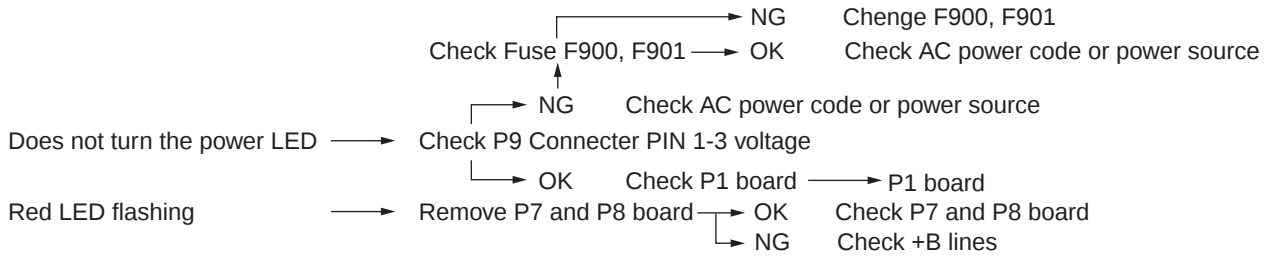
Trouble shooting guide

LED Indication

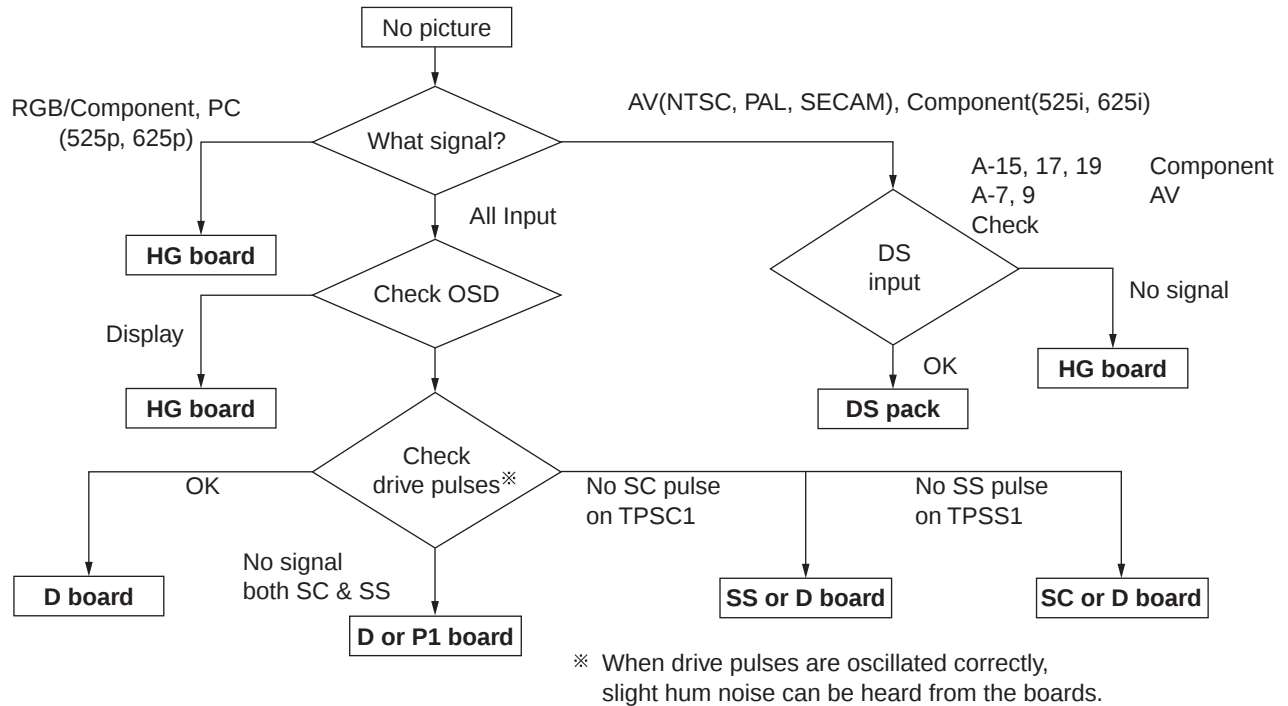
1. The Power LED indicates faulty status of power supply circuit by flashing.
When one of secondary supply voltage is decreased under 2/3 of original voltage, the power LED light change from green to red flashing.



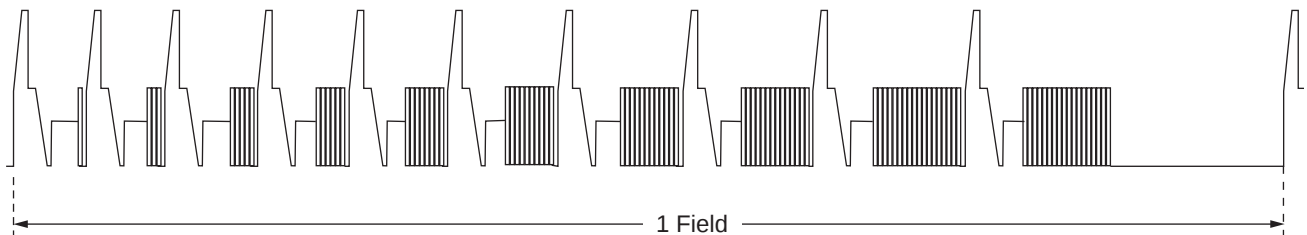
No Power



No Picture

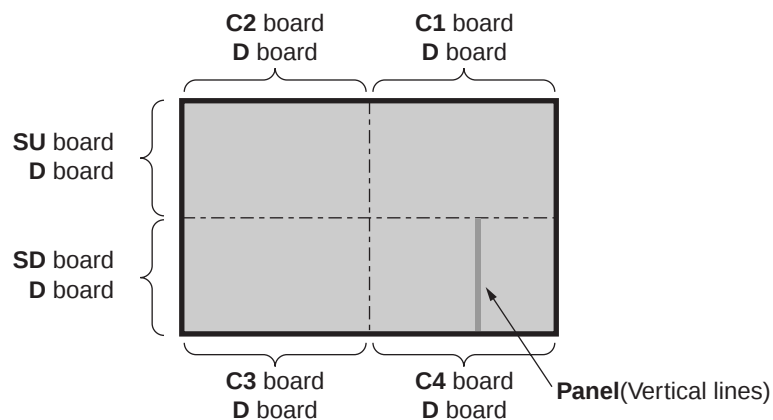


TPSC1 SC pulse



Local screen failure

Plasma display may have local area failure on the screen. Fig-T is the possible defect P.C.B. for each local area.



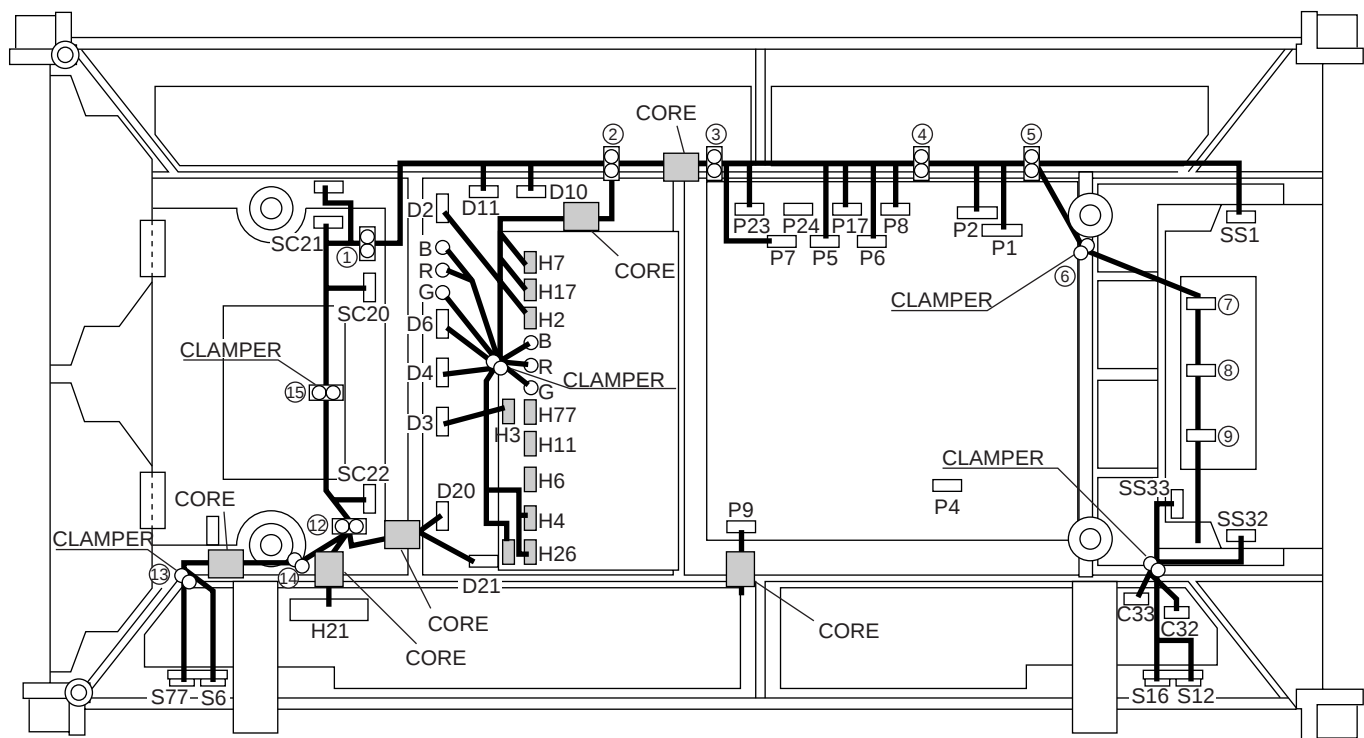
<Local screen failure chart>

Quick adjustment after P.C.B. exchange

When a P.C.B. is changed following P.C.B. should be re-adjusted.

Changed P.C.B.	Item	Volume	Test point	Level
P1 board	VDA	R528	TPDA1(C1)	75V±0.5V
	VSUS	R639	TPVSUS	V _{SUS} ±1V
	VE	R494(P1)	TPVE	V _E ±1V
DS board	DS contrast	IIC mode	TP216	0.7 Vp-p
SC board	Vset	R6587	TPVSET	V _{SET} ±0.5V
	Vscn	R6595	TPVSCN	80V±0.5V
SS board	Erase pulse	R6754	TPSS1	Waveform
D board	Re-confirmation of all alignment setting			

Location of Lead Wiring

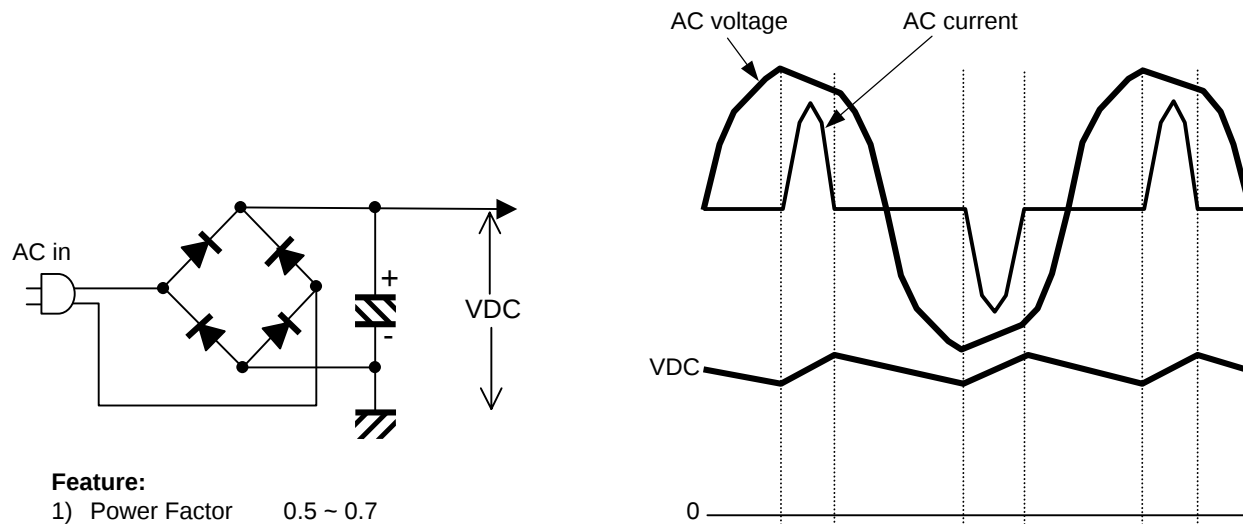


Basic Circuit Explanation

1 POWER SUPPLY CIRCUIT

1-1 Power Factor Control (PFC)

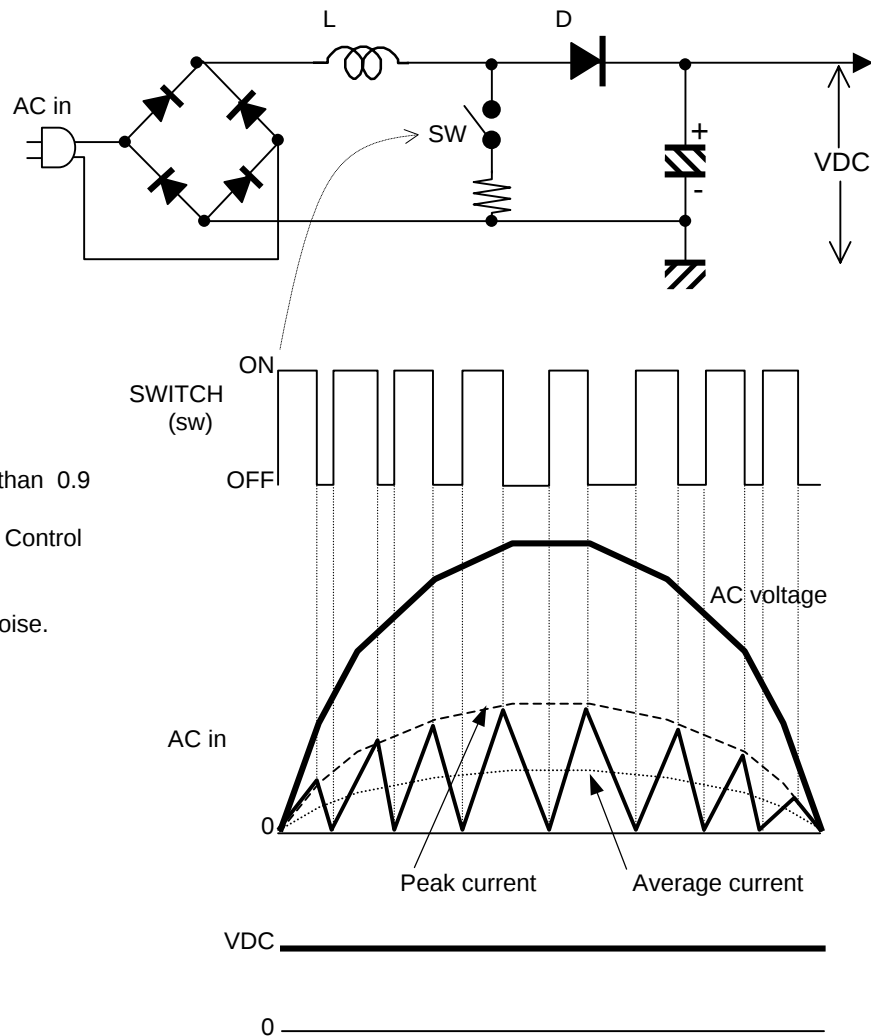
1-1-1 Basic operation of the Full wave bridge rectifier



Feature:

- 1) Power Factor 0.5 ~ 0.7
- 2) Spick AC current with high frequency component.

1-1-2 Power Factor control circuit

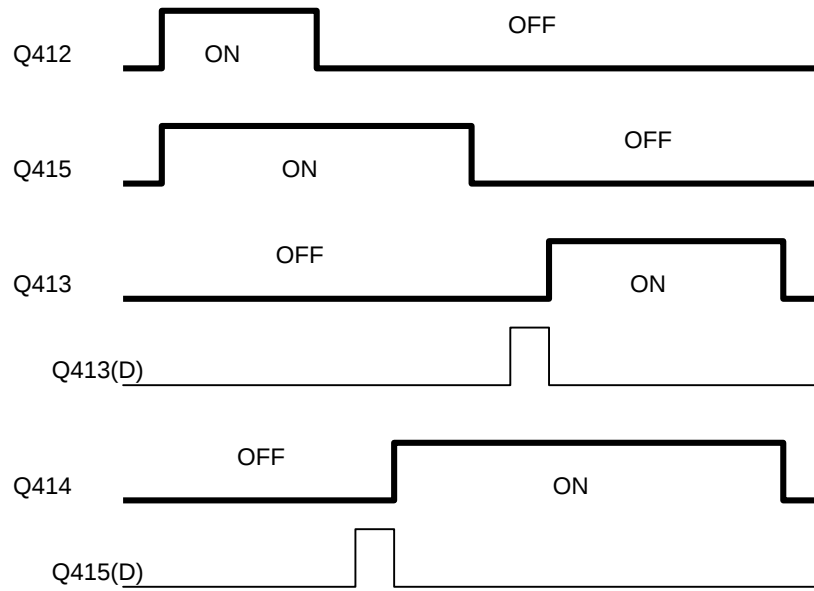
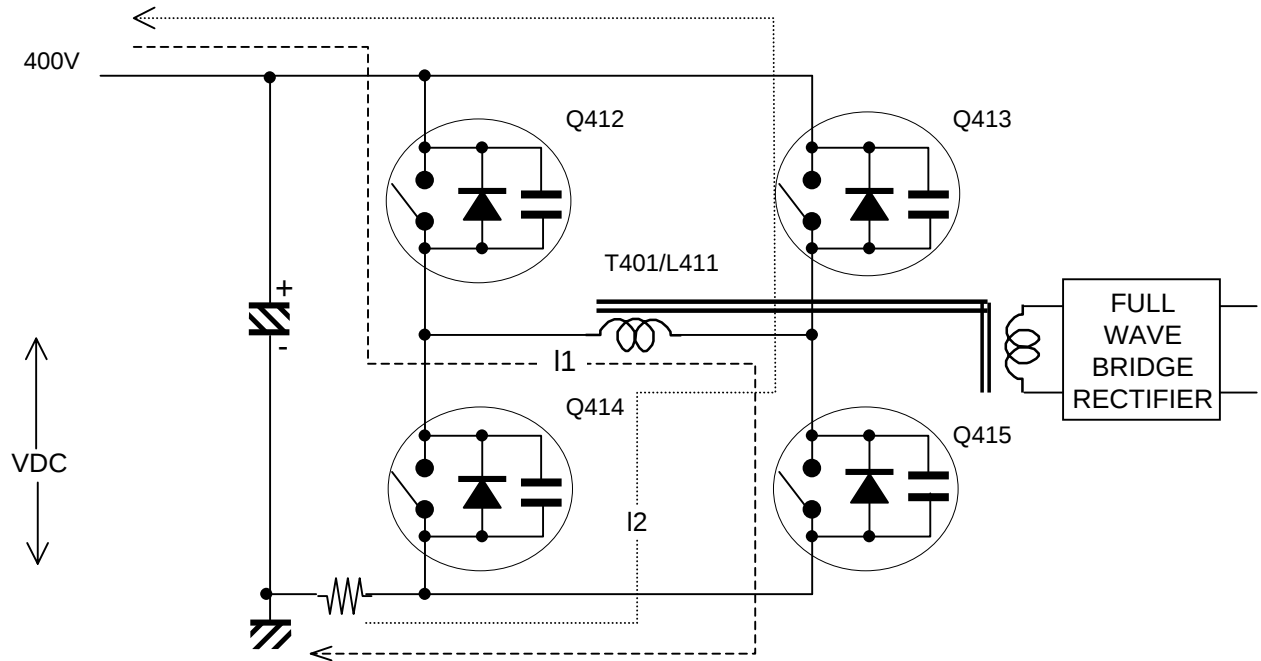


Feature:

- 1) Power Factor More than 0.9
- 2) Automatic Power Factor Control by OFF period change
- 3) Lower high frequency noise.

1-2 Activ Clamp Full Bridge (ACFB)

1-2-1 ACFB equivalent circuit



2. HG BOARD CONTROL

	PIN	PORT	COMPOSITE	COMPONENT							RGB	PC	TUNER	CONTROLLED	REMARK
				525I	525P	625I	625P	1035I	1035P	1080I					
IC8506	2	SW0	φ	H							H	H	L	IC8502	TUNER/EXTERNAL INPUT SELECT
	1	SW1	φ	L								H	φ	IC8503	PC/COMPONENT INPUT SELECT
	9	SW2	φ	φ				L	L	L	φ	φ		NOT USE	
	10	SW3	VIDEO H S-VIDEO L	φ	φ			φ	φ	φ	φ	φ	S-VIDEO INPUT DETECTION	S-VIDEO INPUT DETECTION	
	7	DAC0		BBE CONTROL DAC OUT											BBE CONTROL
IC8507	6	DAC1	H	H								L	L	IC8521 IC8521 IC8513	SYNC. SW A
	5	DAC2	H	L								H	L		SYNC. SW B
	4	DAC3	L		H			L		SYNC ON G	H		IC8517	SYNC. INHIBIT	
	3	DAC4		CONTROL DAC OUT							φ			IC8000	DS SUB CONTRAST
	2	SW0		CONTROL DAC OUT								φ	φ	IC8508	Y DELAY CONTROL
1	SW1		CONTROL DAC OUT								φ	φ	C DELAY CONTROL		
9	SW2		CONTROL DAC OUT								φ	φ	NO USE		
10	SW3		CONTROL DAC OUT								φ	φ	DETAIL		
7	DAC0	φ									φ	φ	DETAIL CORING CONTROL		
IC8516	6	DAC1		CONTROL DAC OUT								φ	φ	DETAIL GAIN CONTROL	
	5	DAC2		CONTROL DAC OUT								φ	φ	SHARPNESS CONTROL	
	4	DAC3		CONTROL DAC OUT								φ	φ	DS/RGB SW	
	3	DAC4		CONTROL DAC OUT								φ	φ	OUTLINE GAIN CONTROL	
	2	SW0		H							L			IC8510&IC8518	DS/RGB SW
IC8508	1	SW1		CONTROL DAC OUT								φ	φ	IC8508	OUTLINE GAIN CONTROL
	9	SW2		L							H			IC8511	DS/RGB SW
	10	SW3		CONTROL DAC OUT								φ	φ	DS RESET	
	7	DAC0		CONTROL DAC OUT								φ	φ	IC8509	BLOOMING LEVEL CONTROL
	6	DAC1		CONTROL DAC OUT								φ	φ		FAN MOTOR CONTROL
	5	DAC2		CONTROL DAC OUT								φ	φ		DSC LIMITER CONTROL
	4	DAC3		CONTROL DAC OUT								φ	φ	IC8508	DSC CORING CONTROL
	3	DAC4		φ								φ	φ	NOT USE	

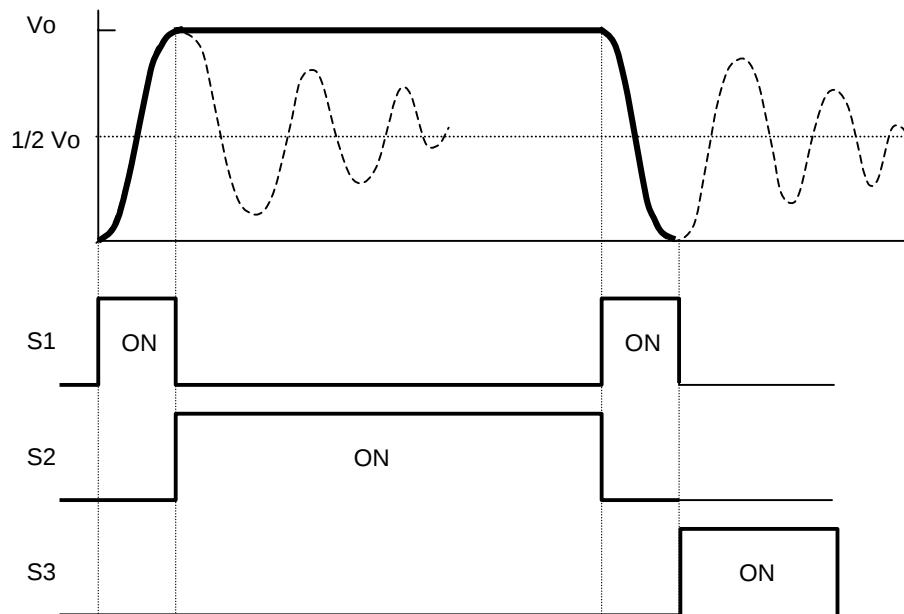
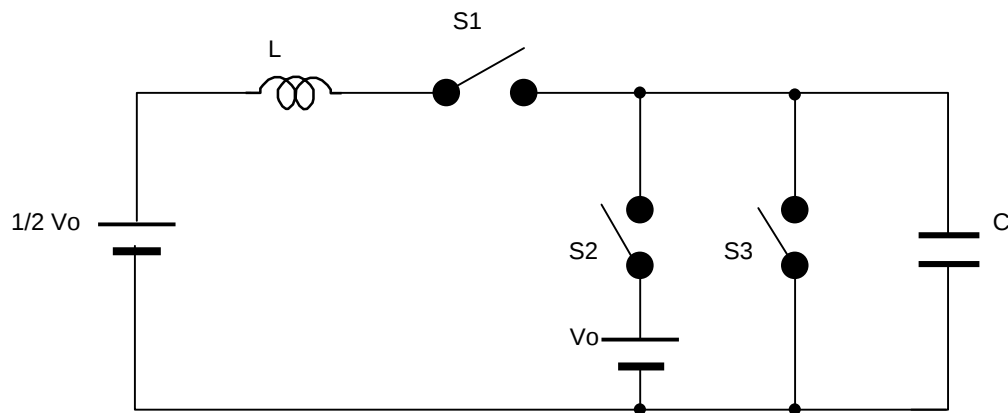
3 ENERGY RECOVERY DRIVE PULSE OUTPUT

3-1 Plasma Panel Energy Loss

When the Sustain, Scan and Data drive pulses are supplied to the plasma panel a lot of energy was lost by resistance of the electrodes lead and many of switching elements. Because plasma panel has the stray capacitance and this capacitance makes high level inrush current during the charge and discharge. This energy loss becomes high temperature from the plasma panel itself.

3-2 Energy Recovery circuit

3-2-1 Basic operation of the energy recovery circuit

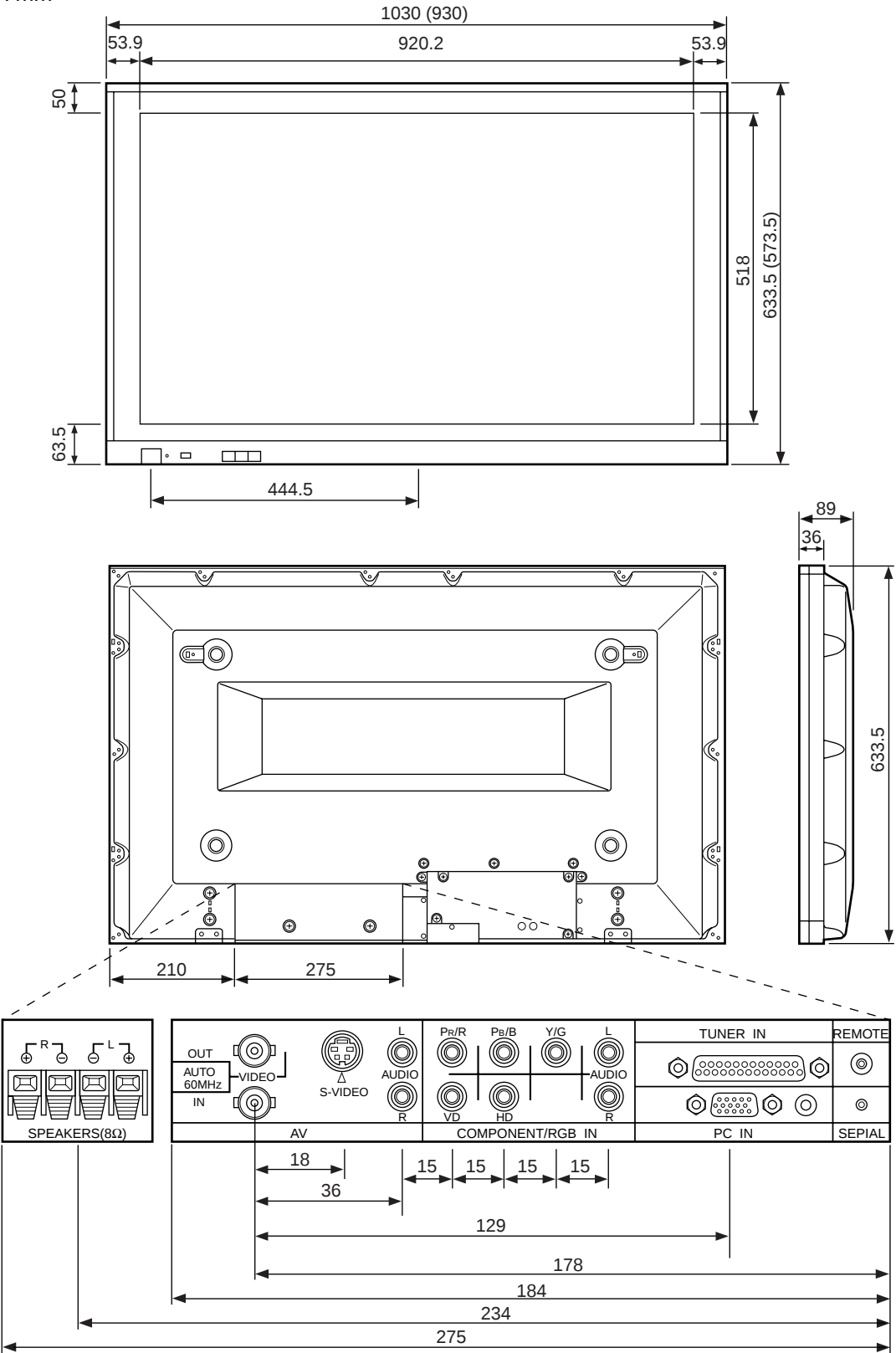


3-2-2 Energy recovery circuit reference

DRIVE SECTION		S1	S2	S3	L	1/2 Vo	Vo	C
SUSTAIN DRIVE OUT		Charge Q6721 Q6722 Discharge Q6723 Q6724	Q6701 Q6702 Q6703 Q6704	Q6705 Q6706 Q6707 Q6708	L6712 L6713 L6714 L6715 L6716	C6721 C6722 C6723 C6724 C6725	VSUS	PLASMA PANEL STRAY CAPACITANCE
SCAN GROUND VOLTAGE		Charge Q6621 Q6622 Discharge Q6623 Q6624	Q6601 Q6602 Q6603 Q6604	Q6605 Q6605 Q6607 Q6608	L6611 L6612 L6613 L6614 L6615	C6621 C6622 C6623 C6625 C6626	VSUS	
DATA PULSE DRIVE	C1	Charge Q7103 Discharge Q7104	Q7101	Q7102	L7101 L7102	C7121 C7122 C7123 C7124 C7125	VDA (70V)	
	C2	Charge Q7203 Discharge Q7204	Q7201	Q7202	L7101 L7102	C7221 C7222 C7223 C7224 C7225		
	C3	Charge Q7303 Discharge Q7304	Q7301	Q7302	L7101 L7102	C7321 C7322 C7323 C7324 C7325		
	C4	Charge Q7403 Discharge Q7404	Q7401	Q7402	L7401 L7402	C7421 C7422 C7423 C7424 C7425		

Dimensions of the display unit

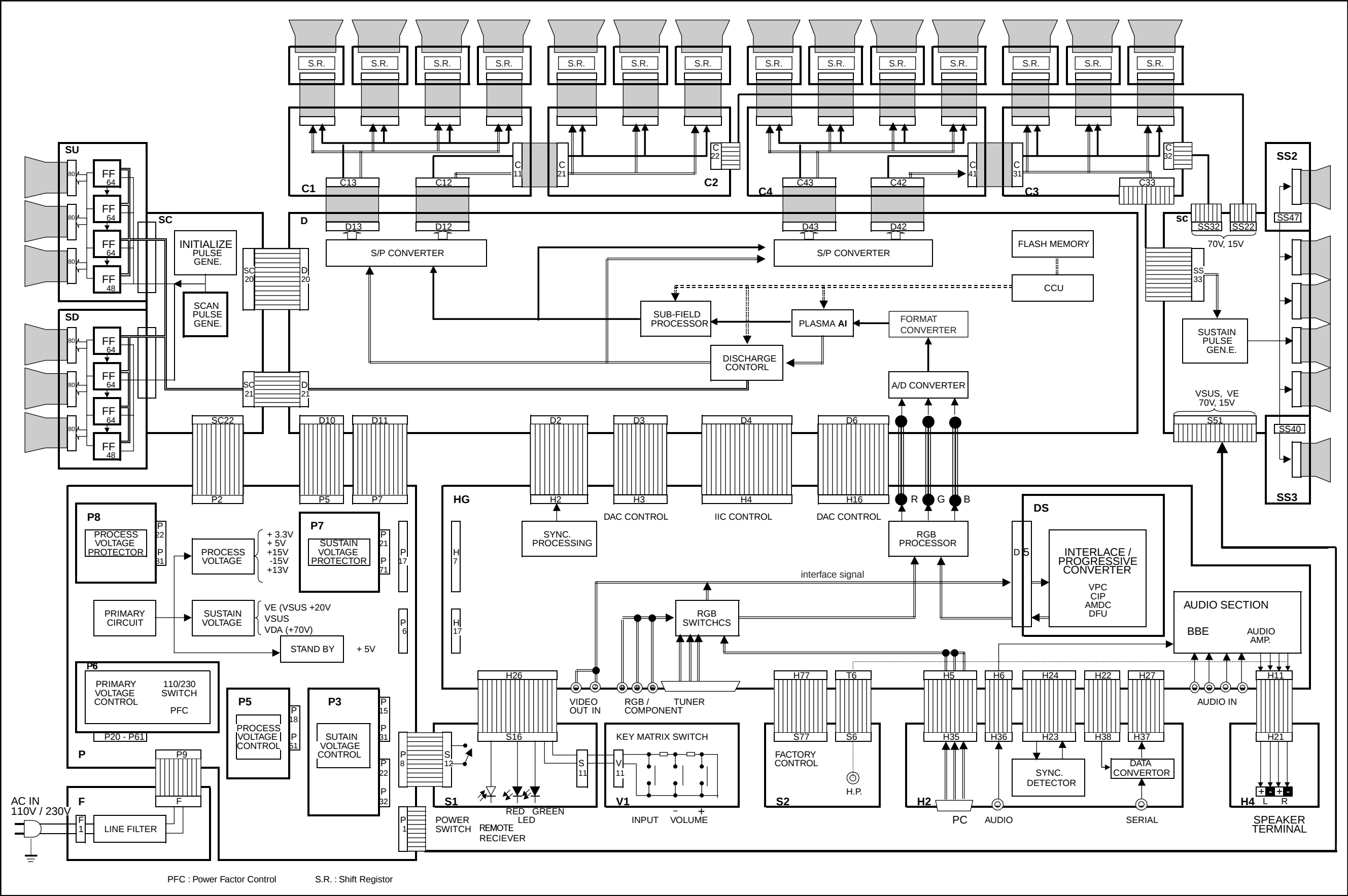
Units : mm



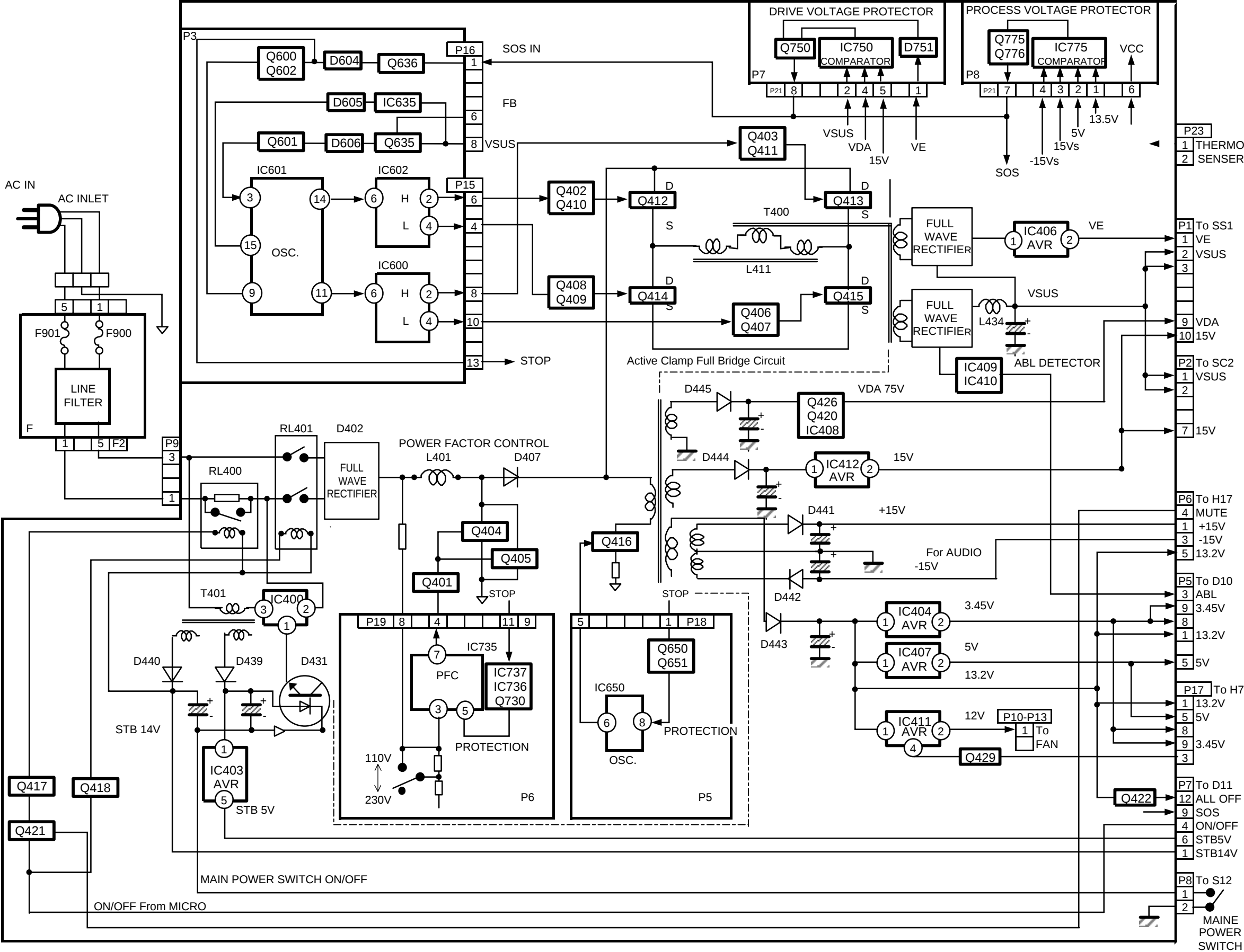
■ To connect the power cord and others, refer to the documentation that comes with the Wide Plasma Display.
() ... 37 inch model

Block and Schematic Diagrams

GP2D Chassis Block Diagram

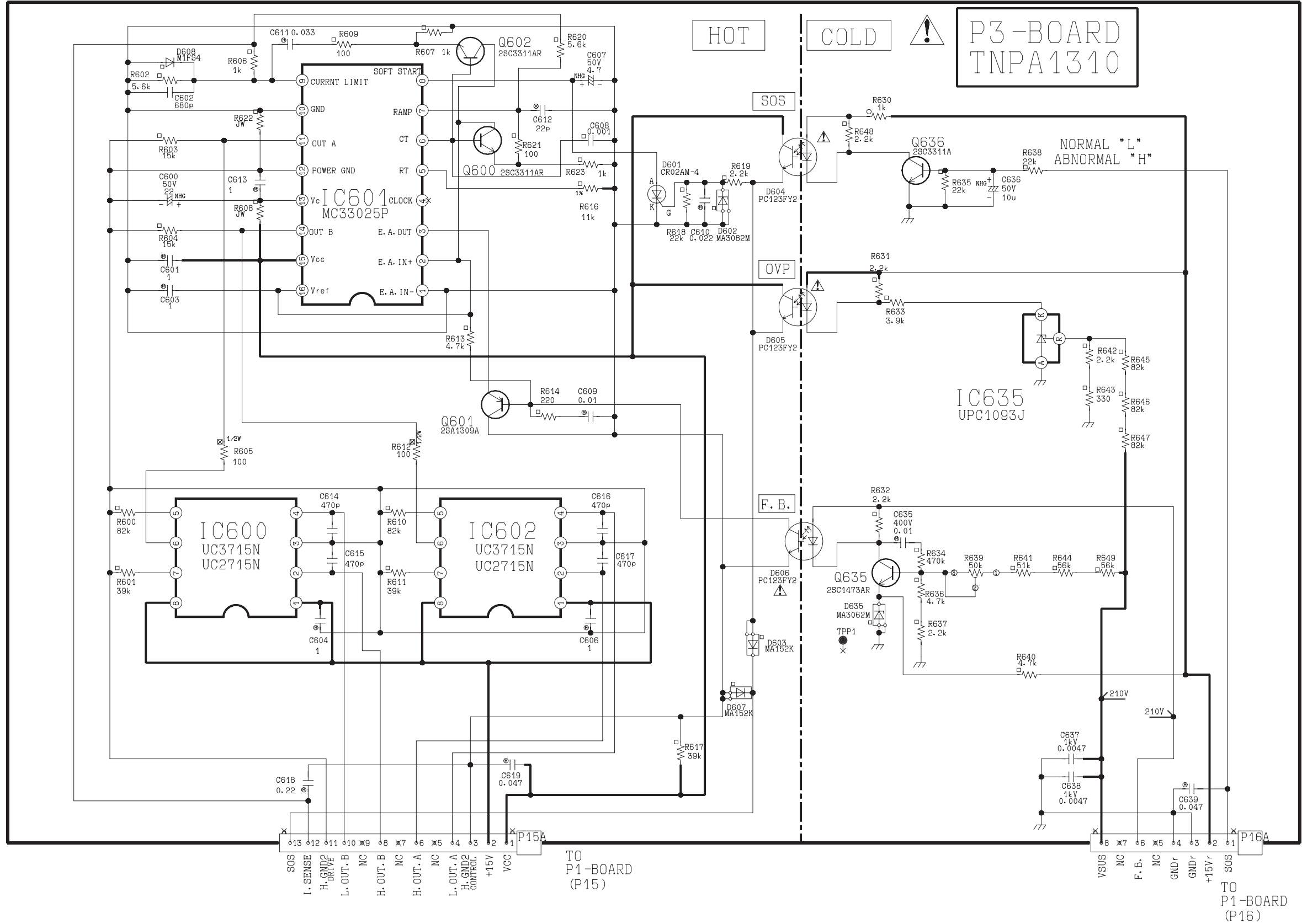


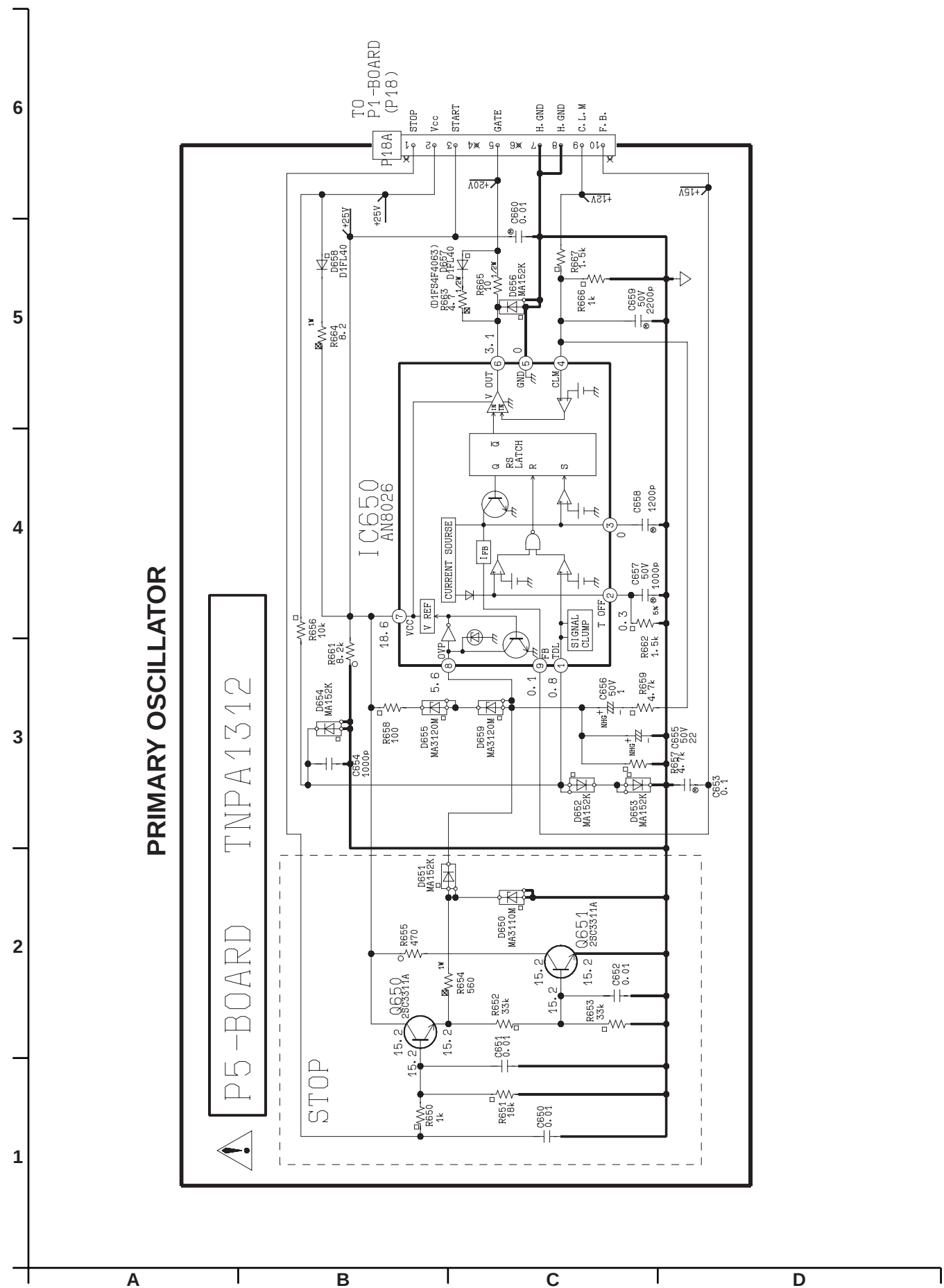
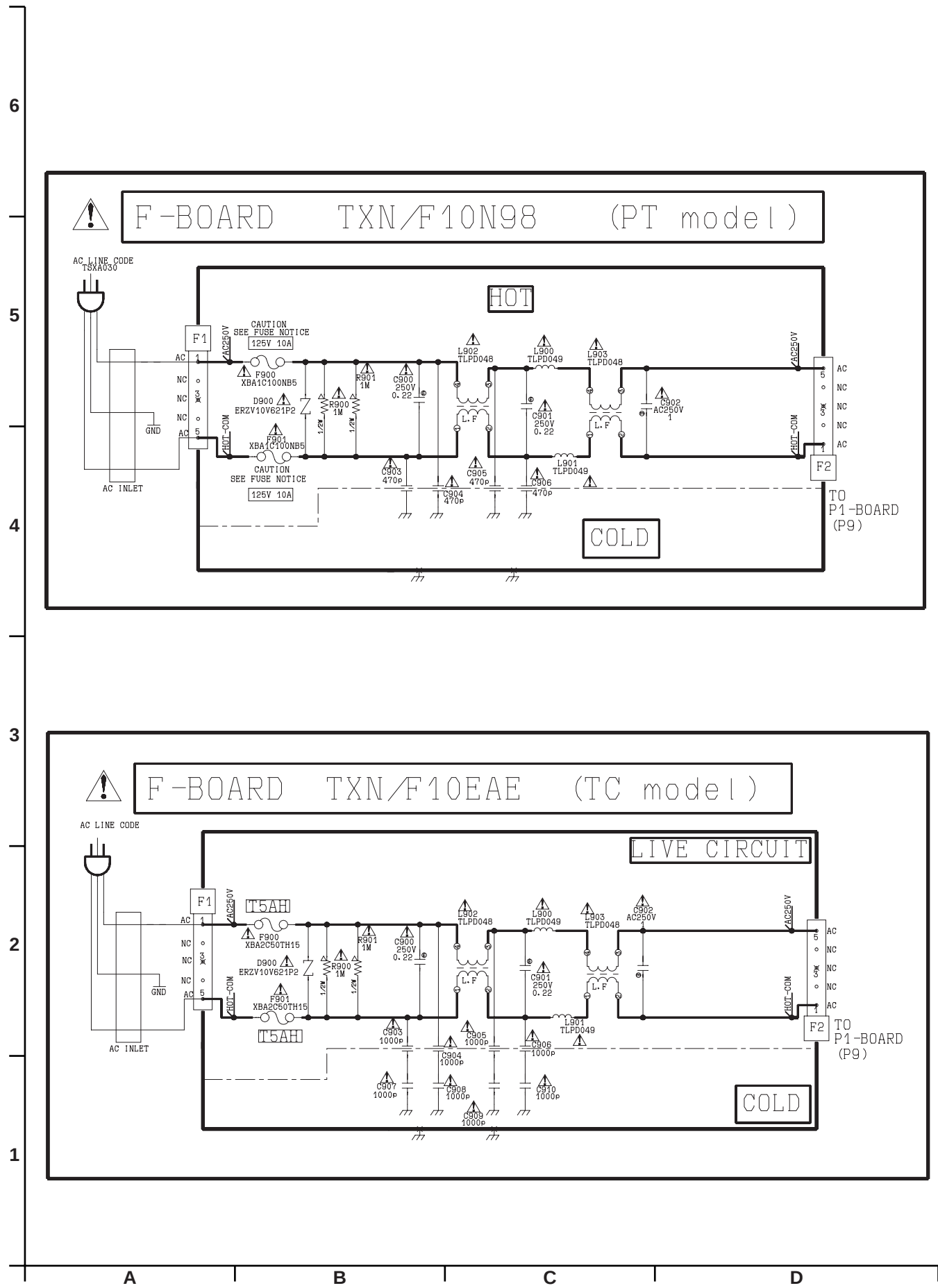
Power (F,P,P3,P5,P6,P7 and P8 Board) Block

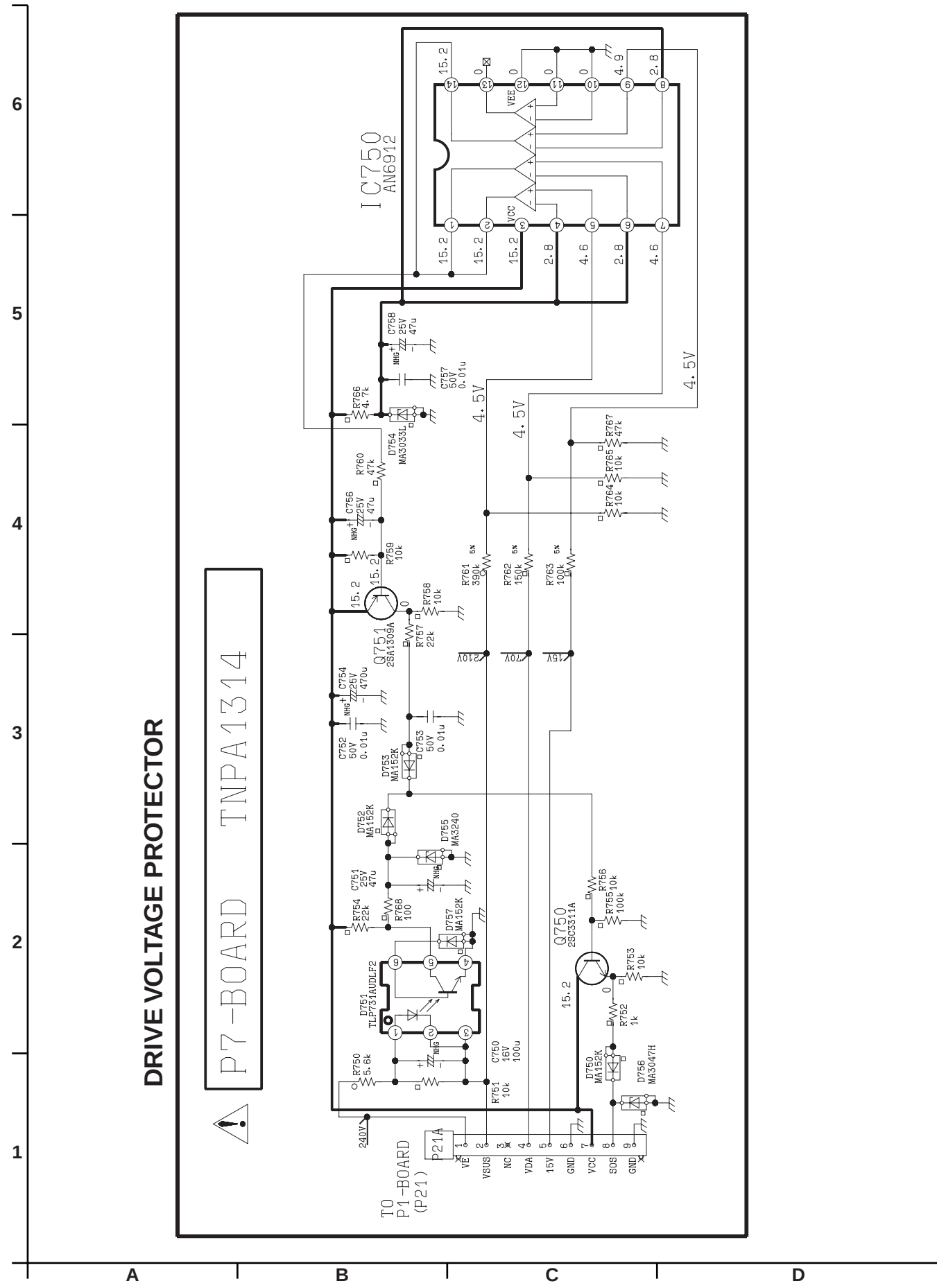
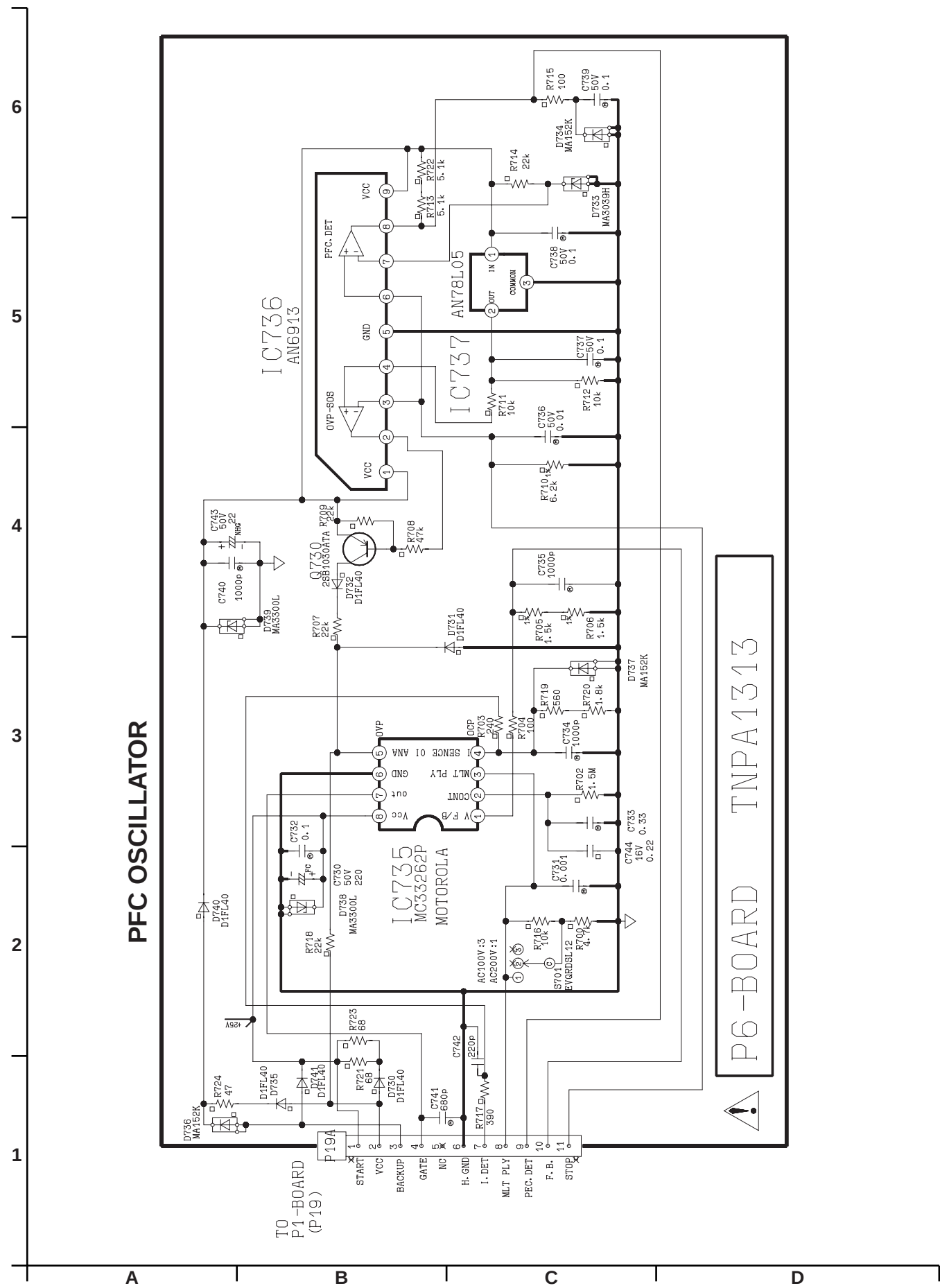


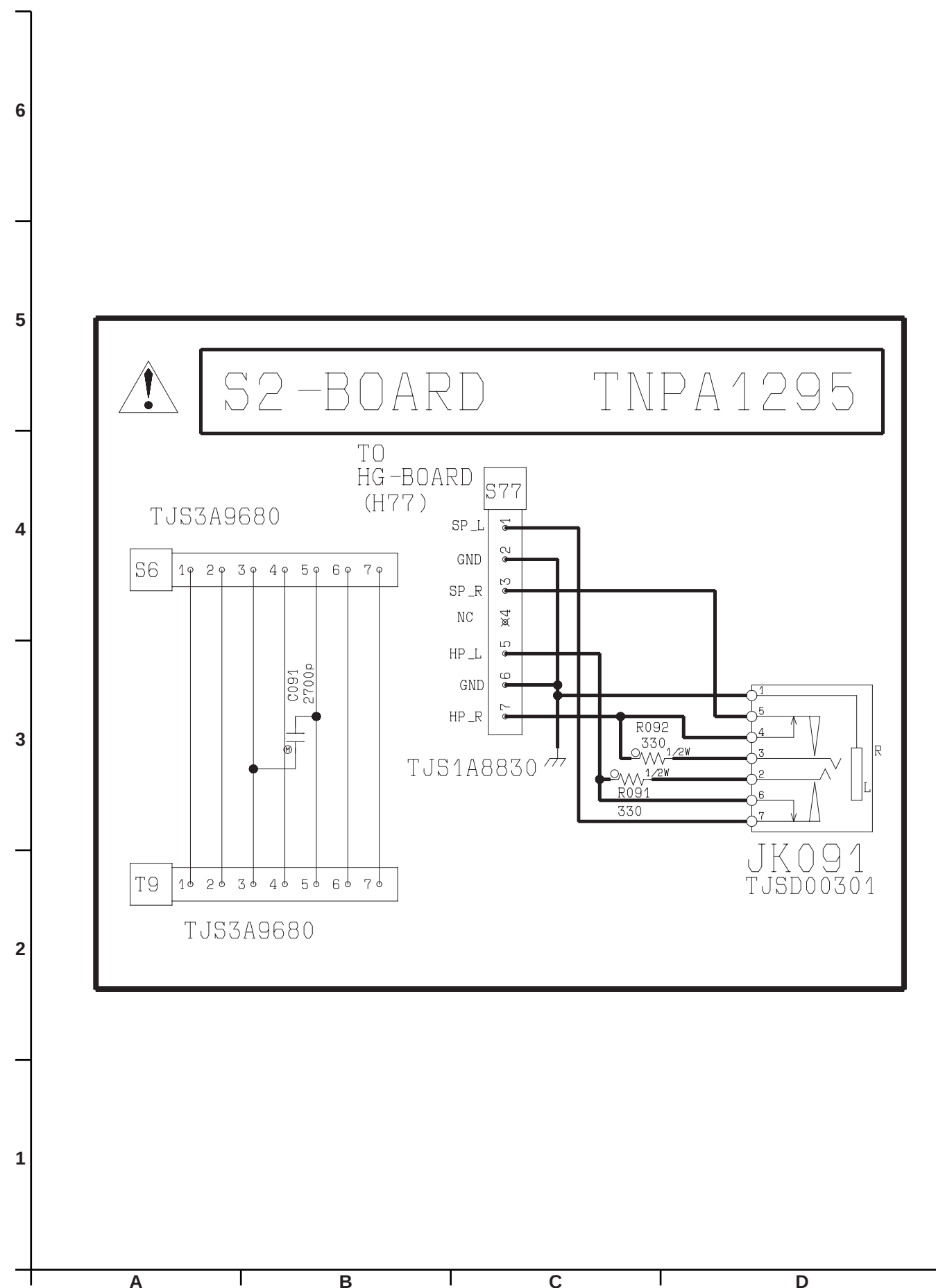
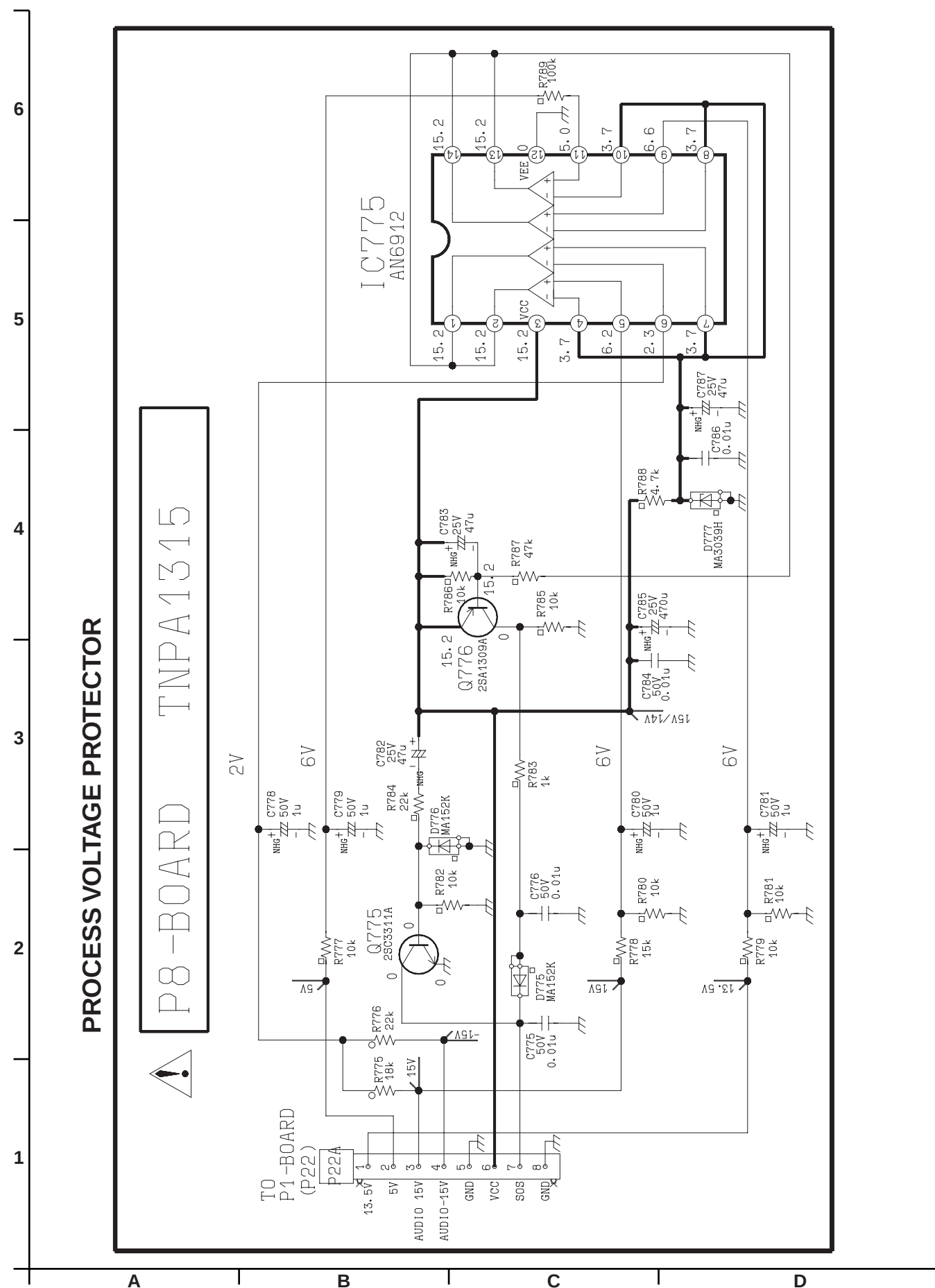
DRIVE VOLTAGE OSCILLATOR

6
5
4
3
2
1

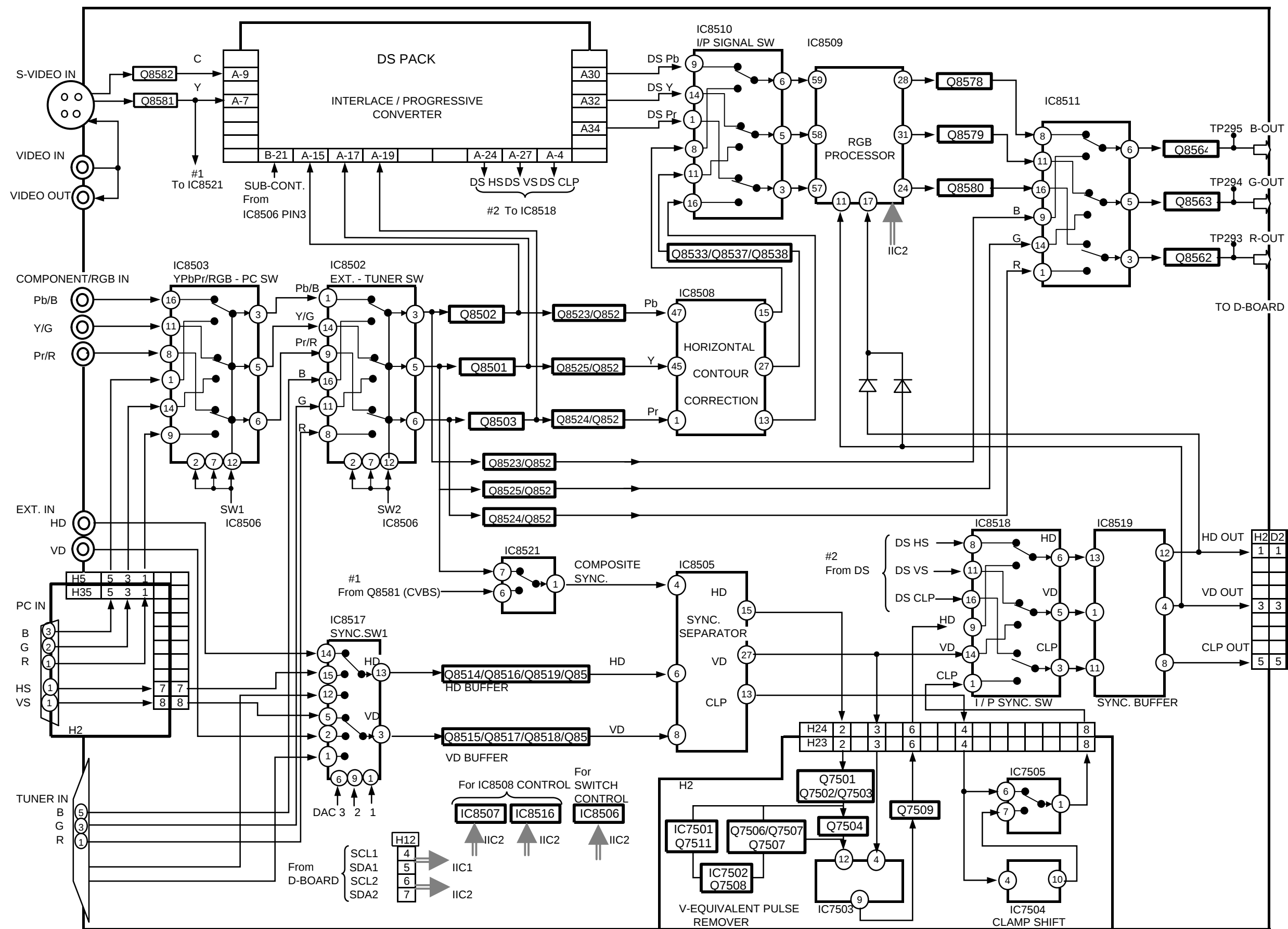




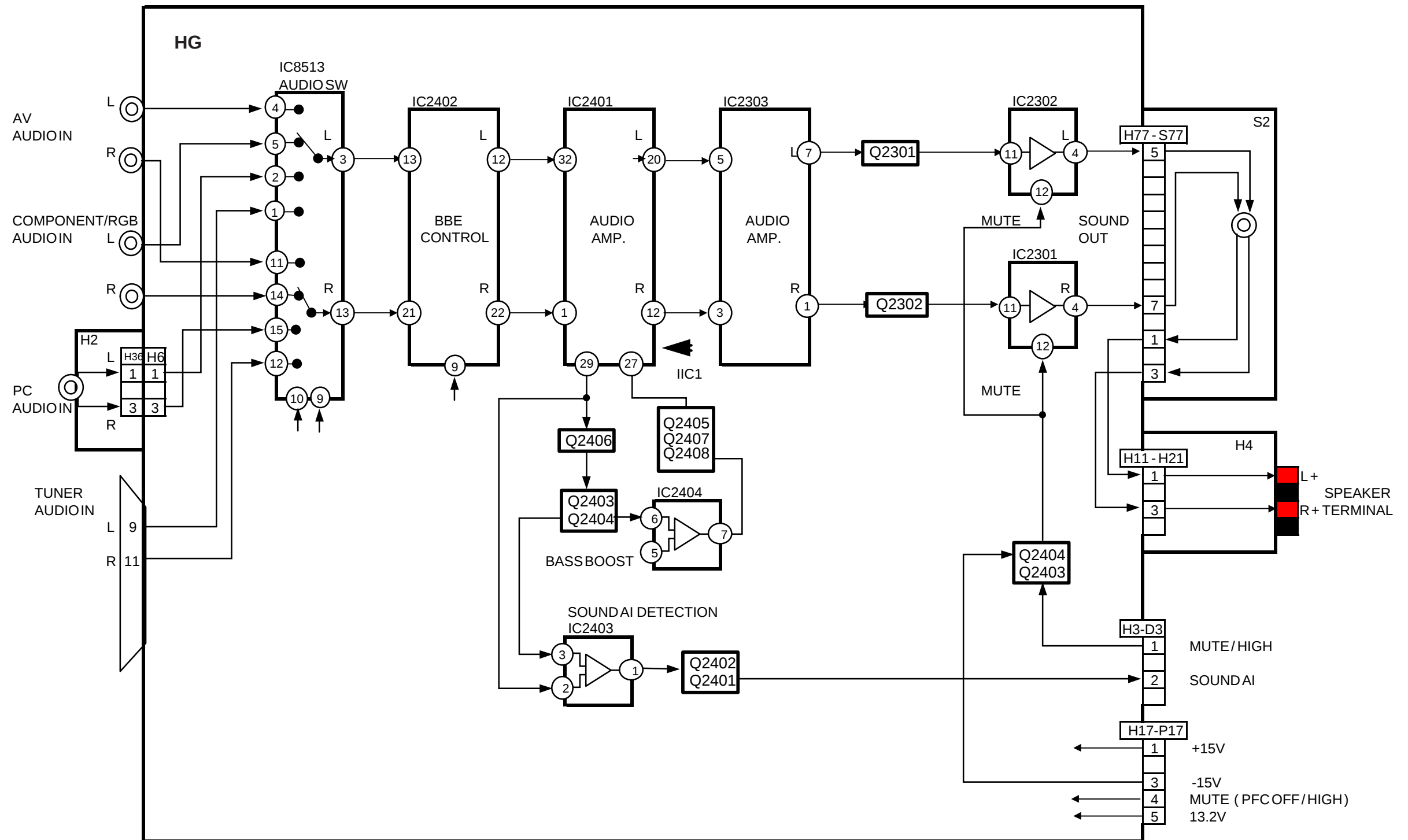




HG Board Block



Audio (H2,H4,HG and S2 Board) Block

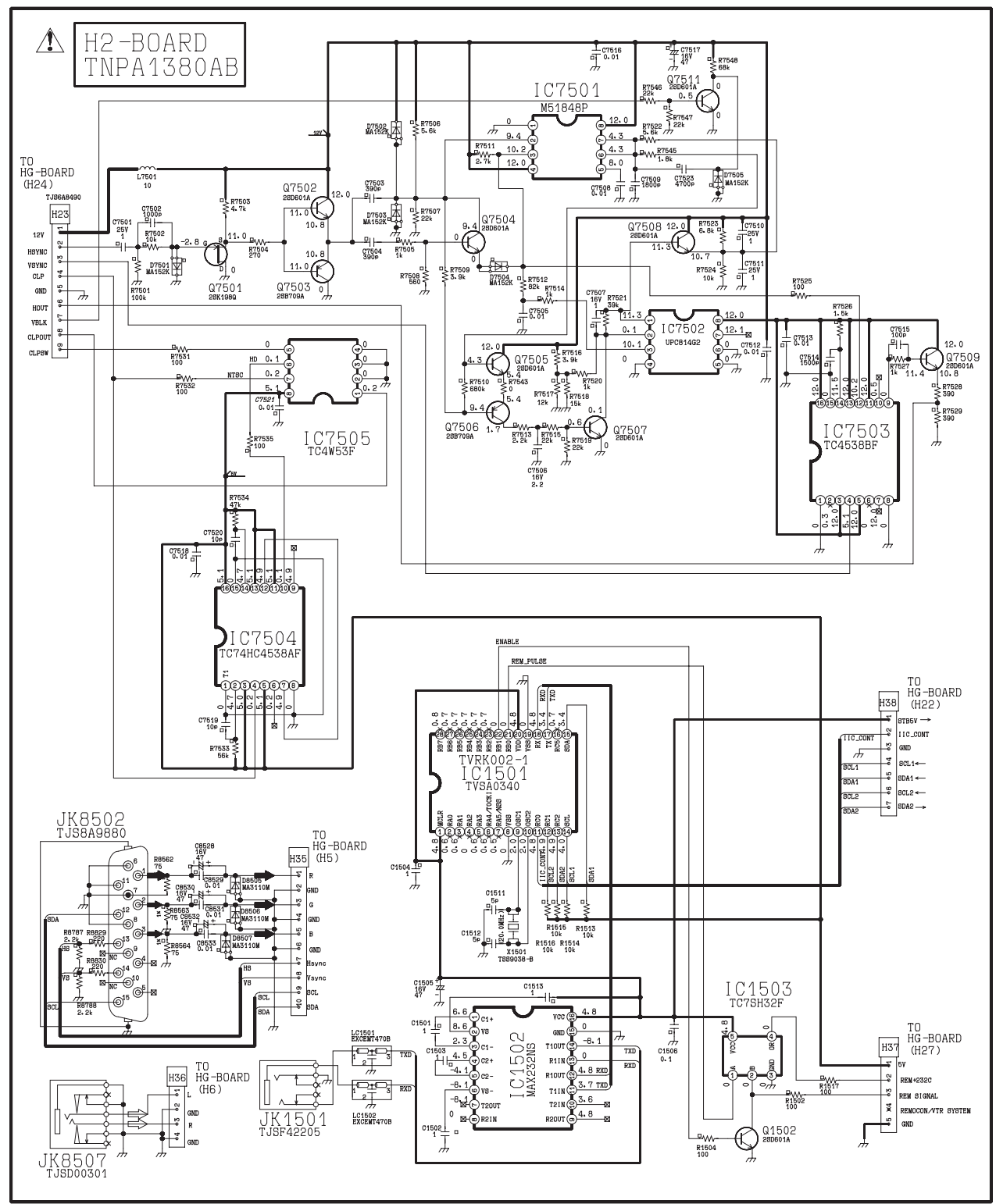






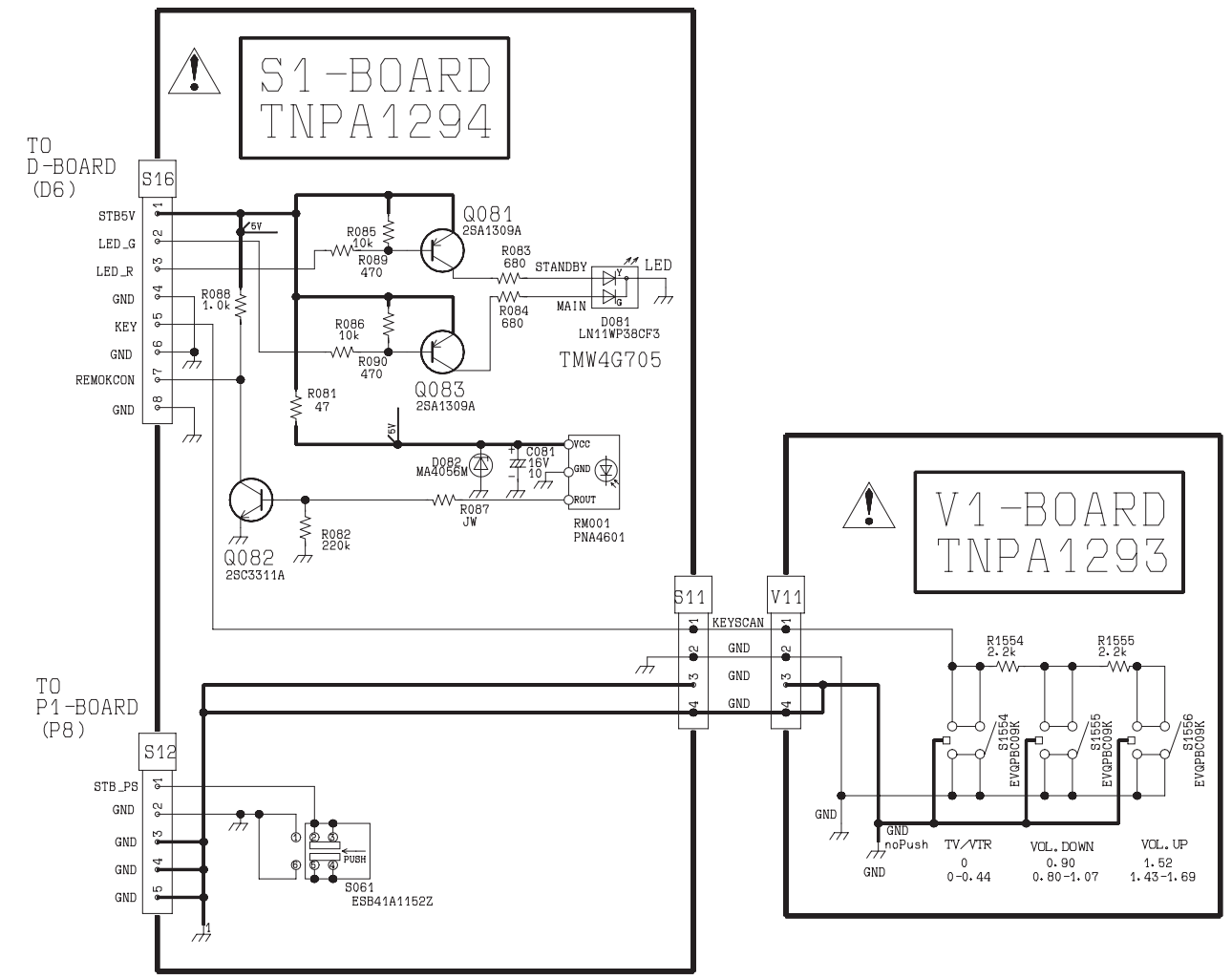


6
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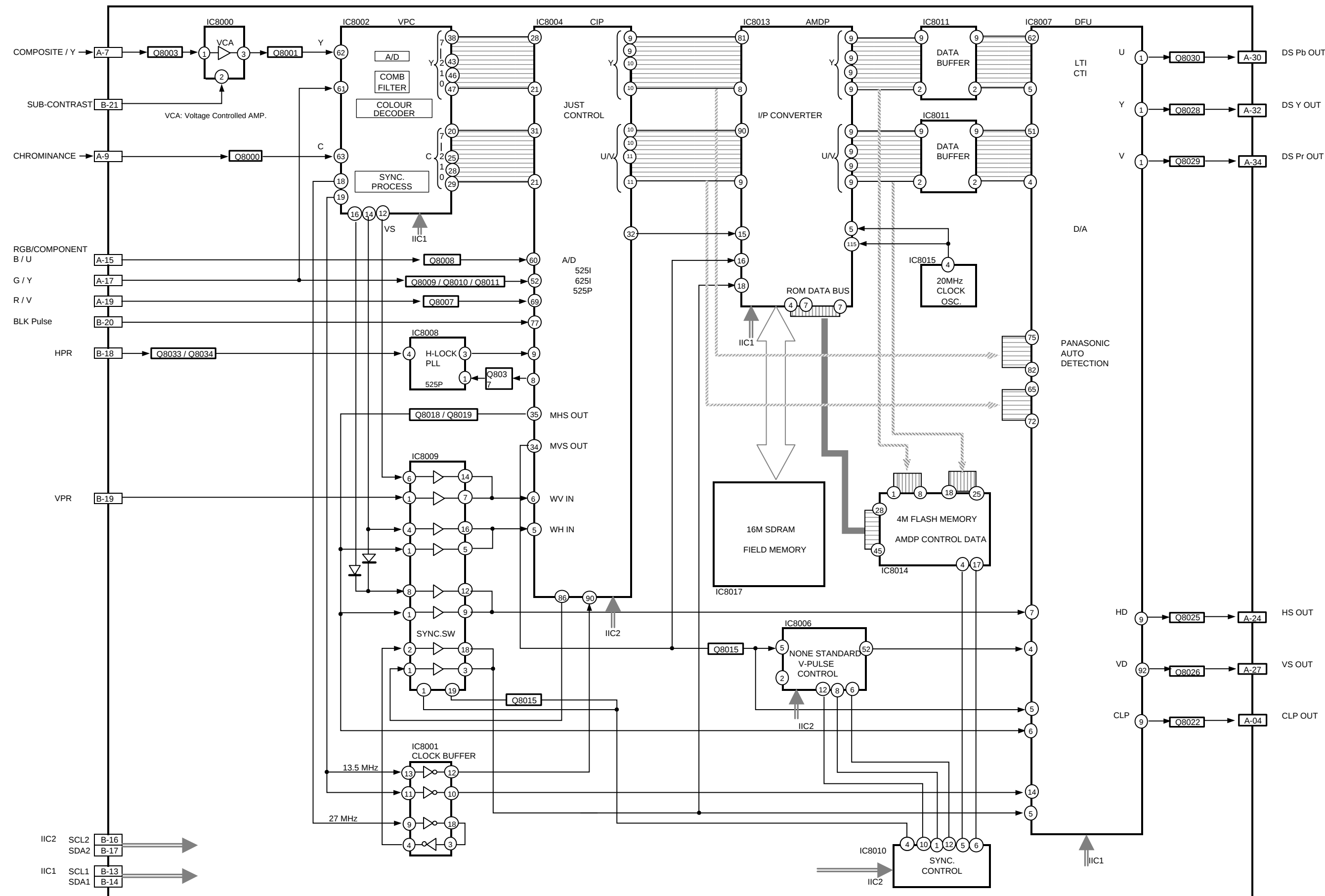
A B C D

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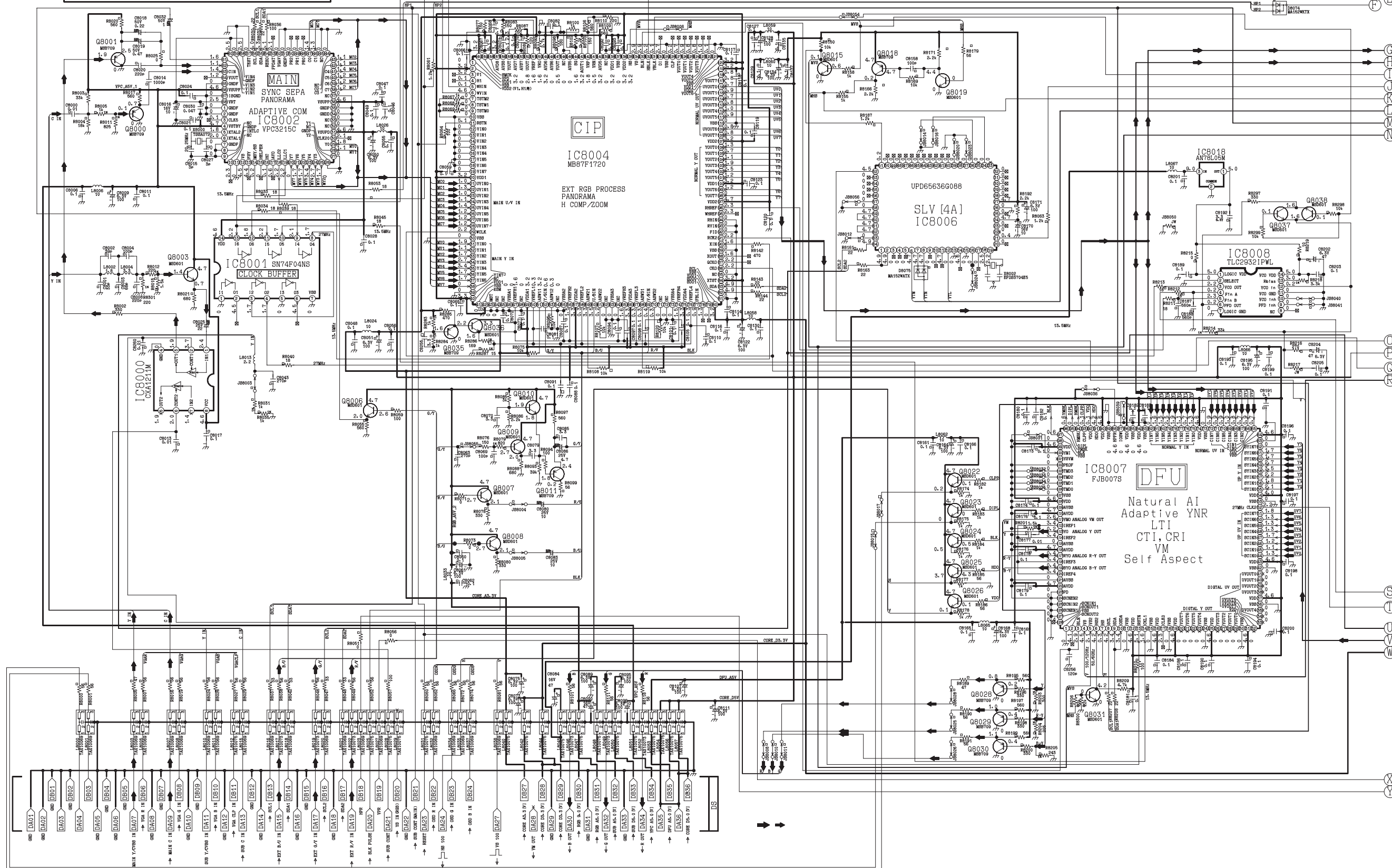


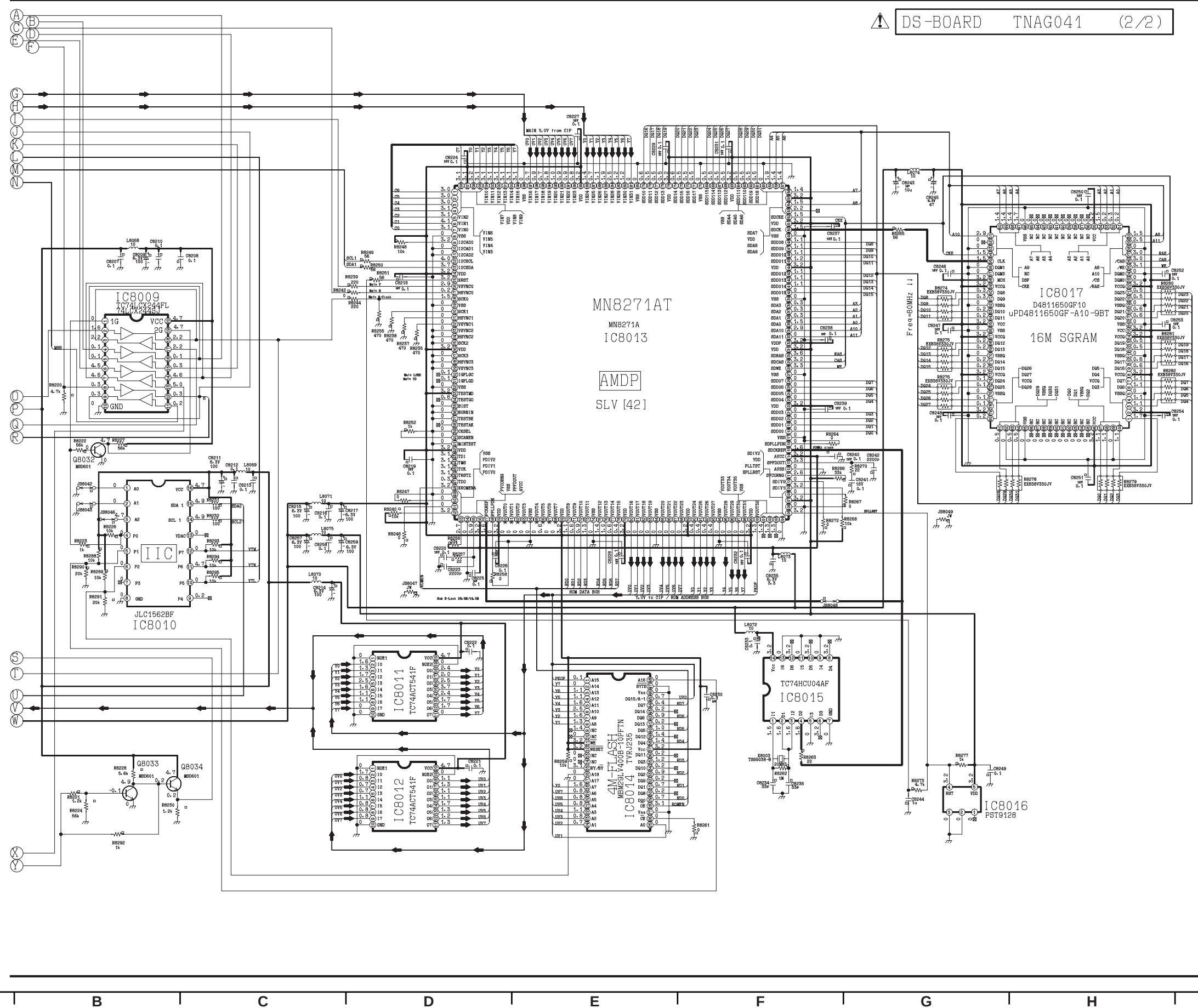
A B C D

DS Board Block

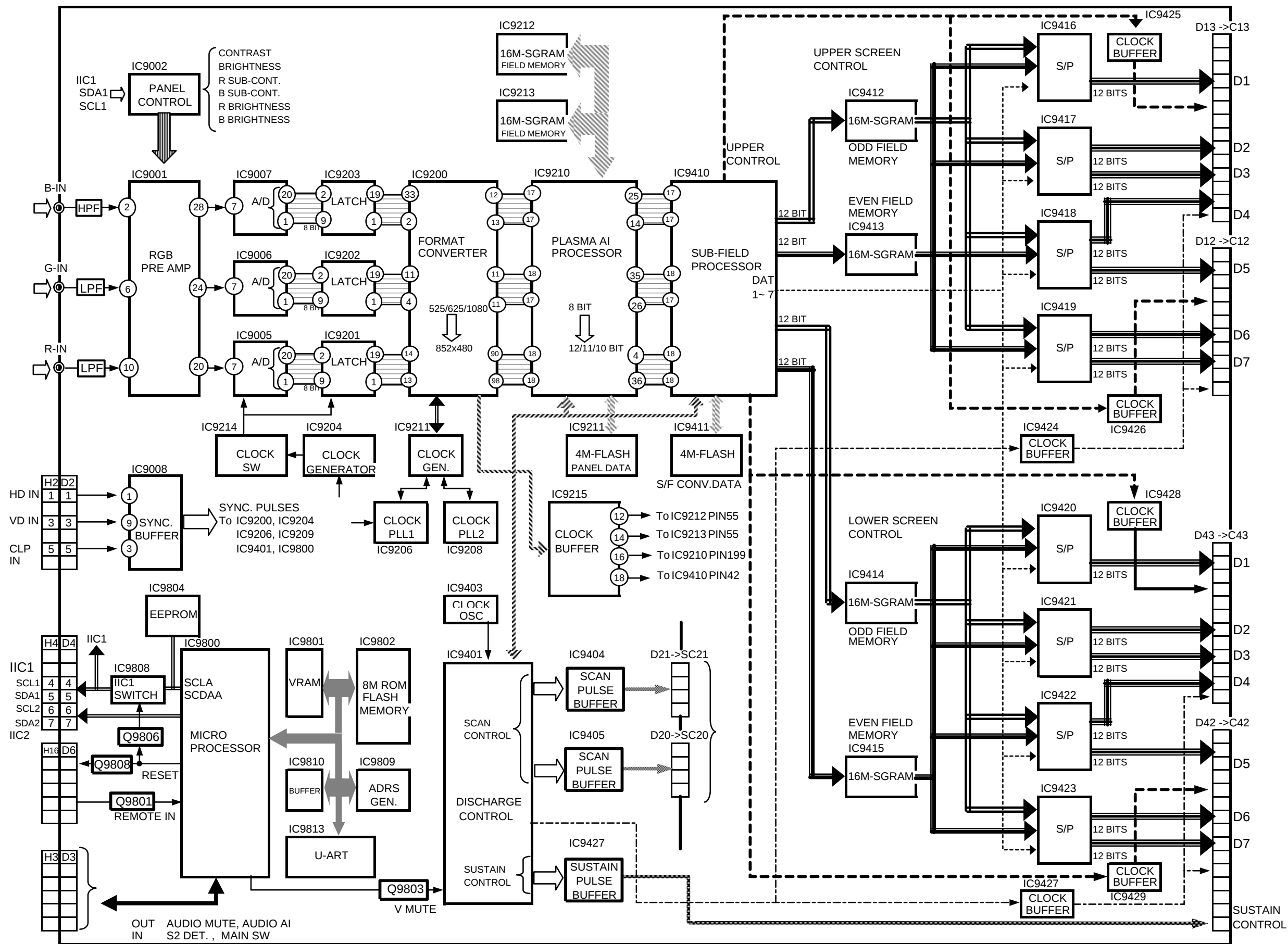


DS-BOARD TNAG041 (1/2)

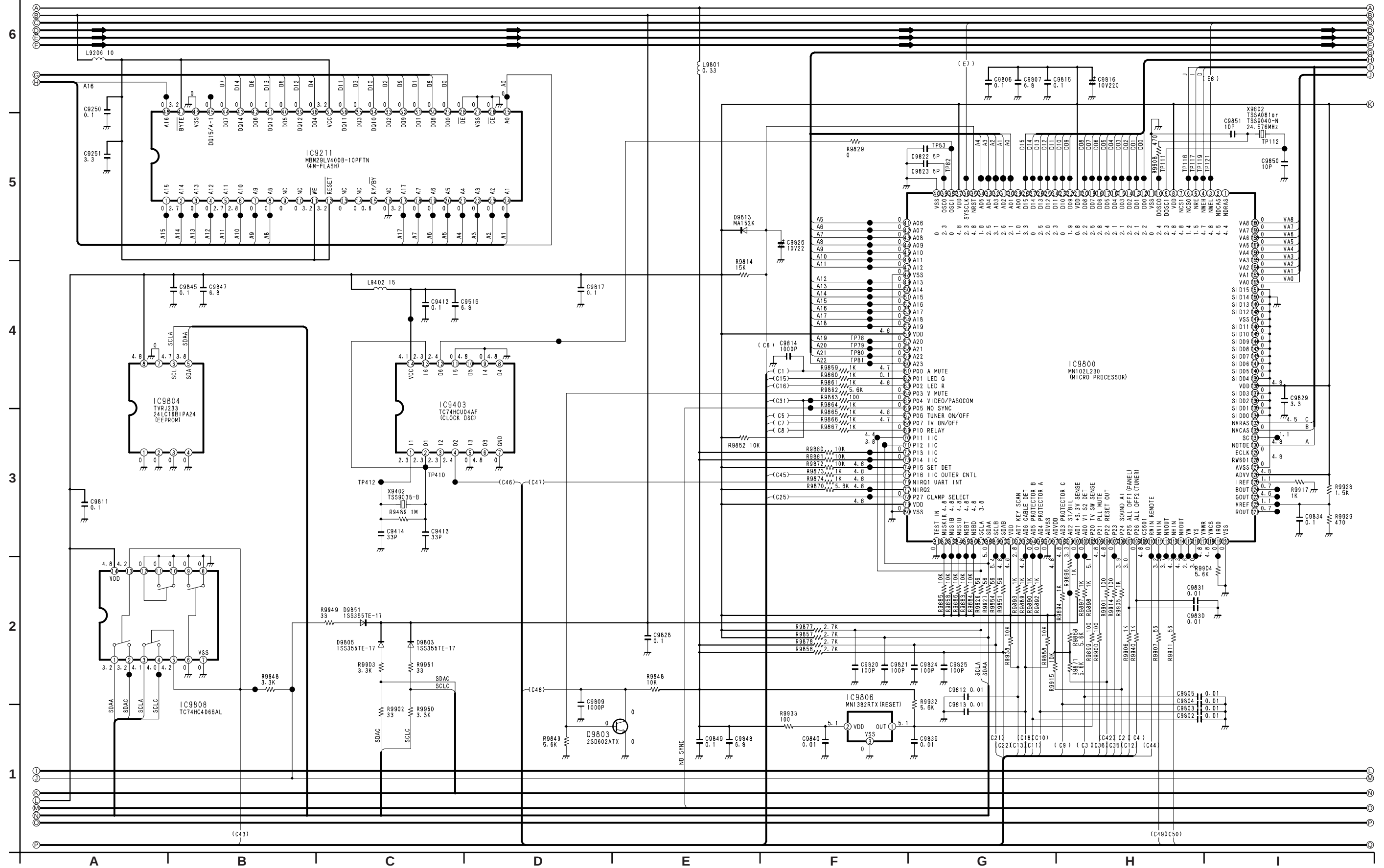


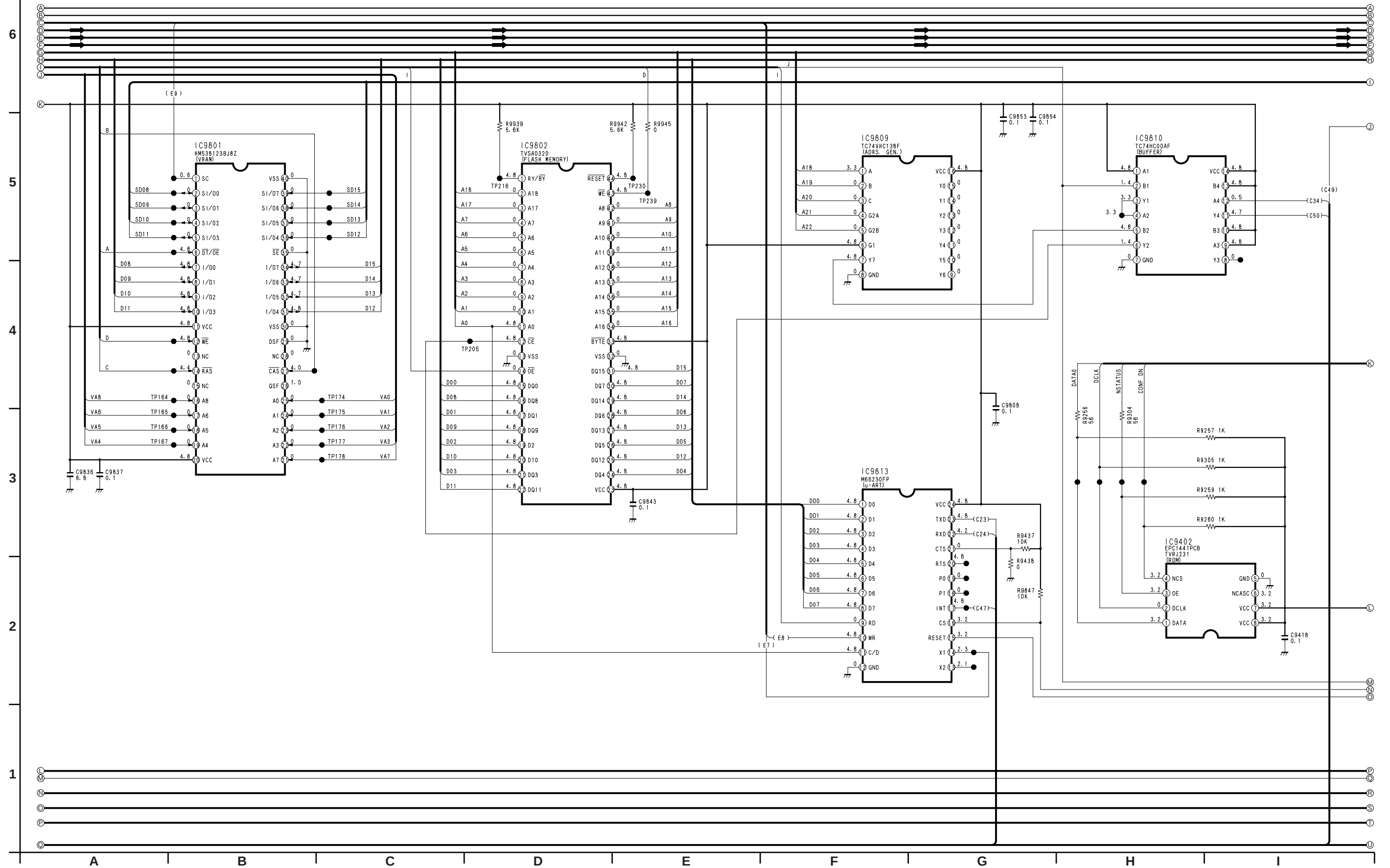


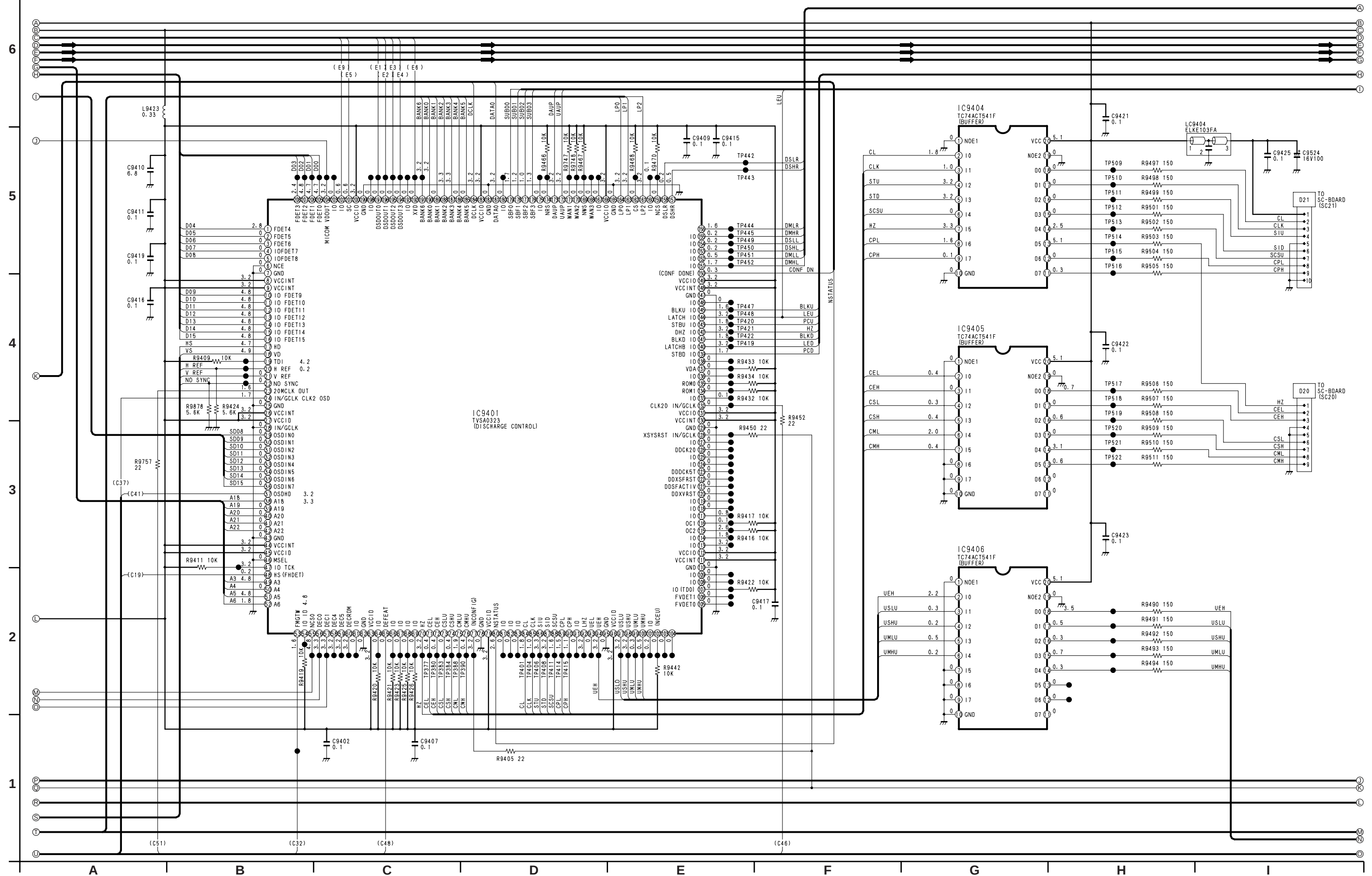
D Board Block



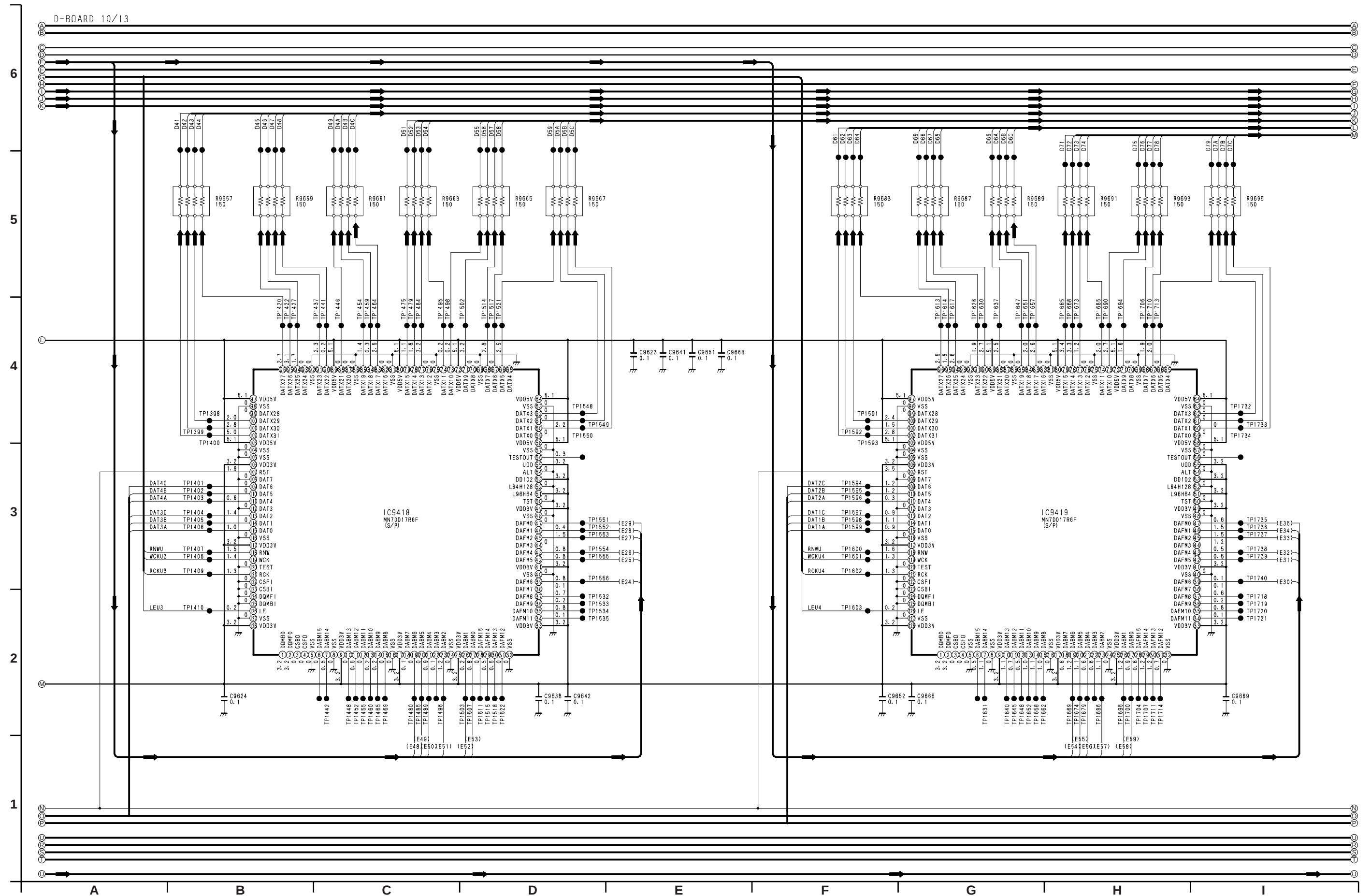




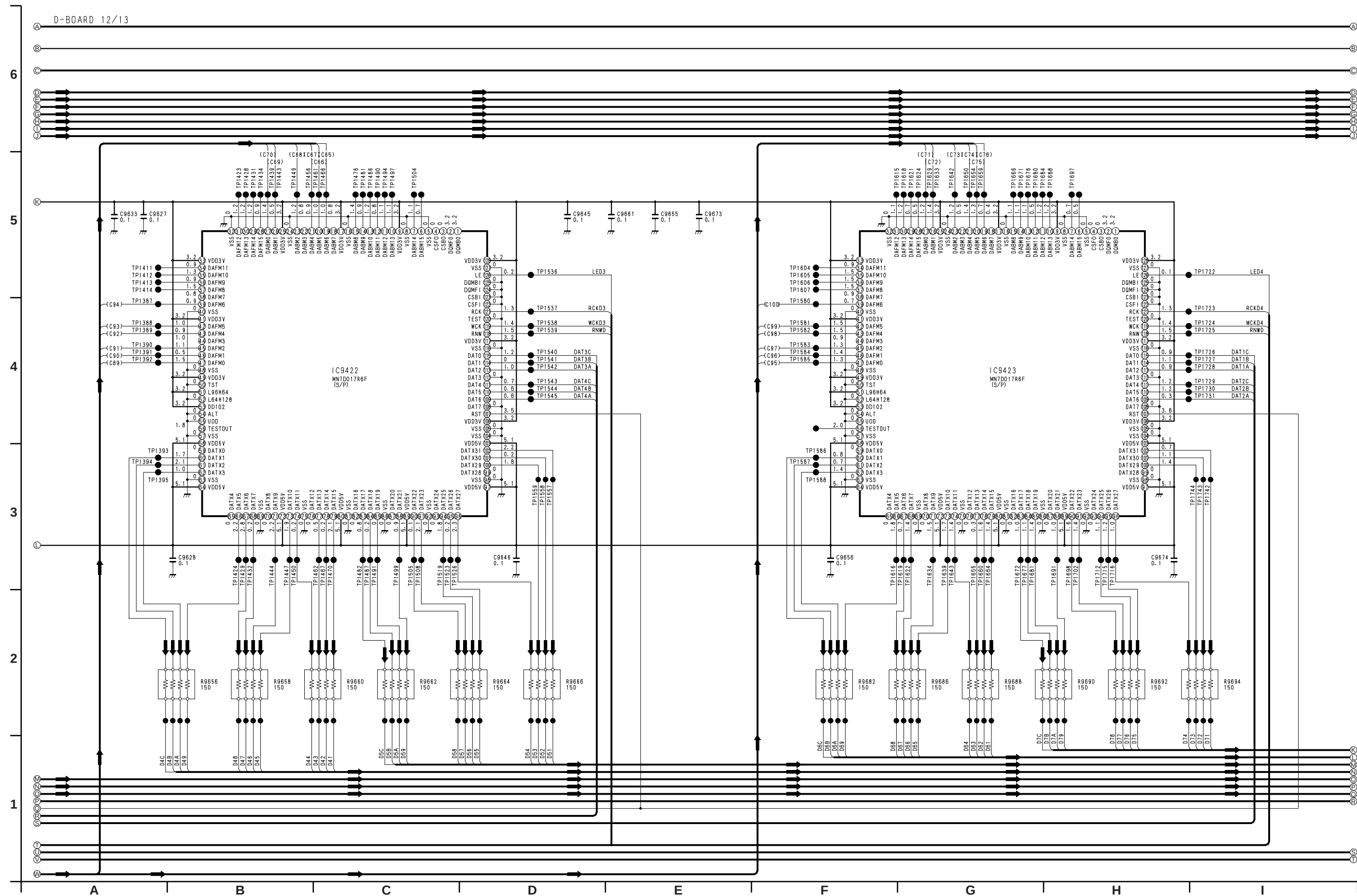




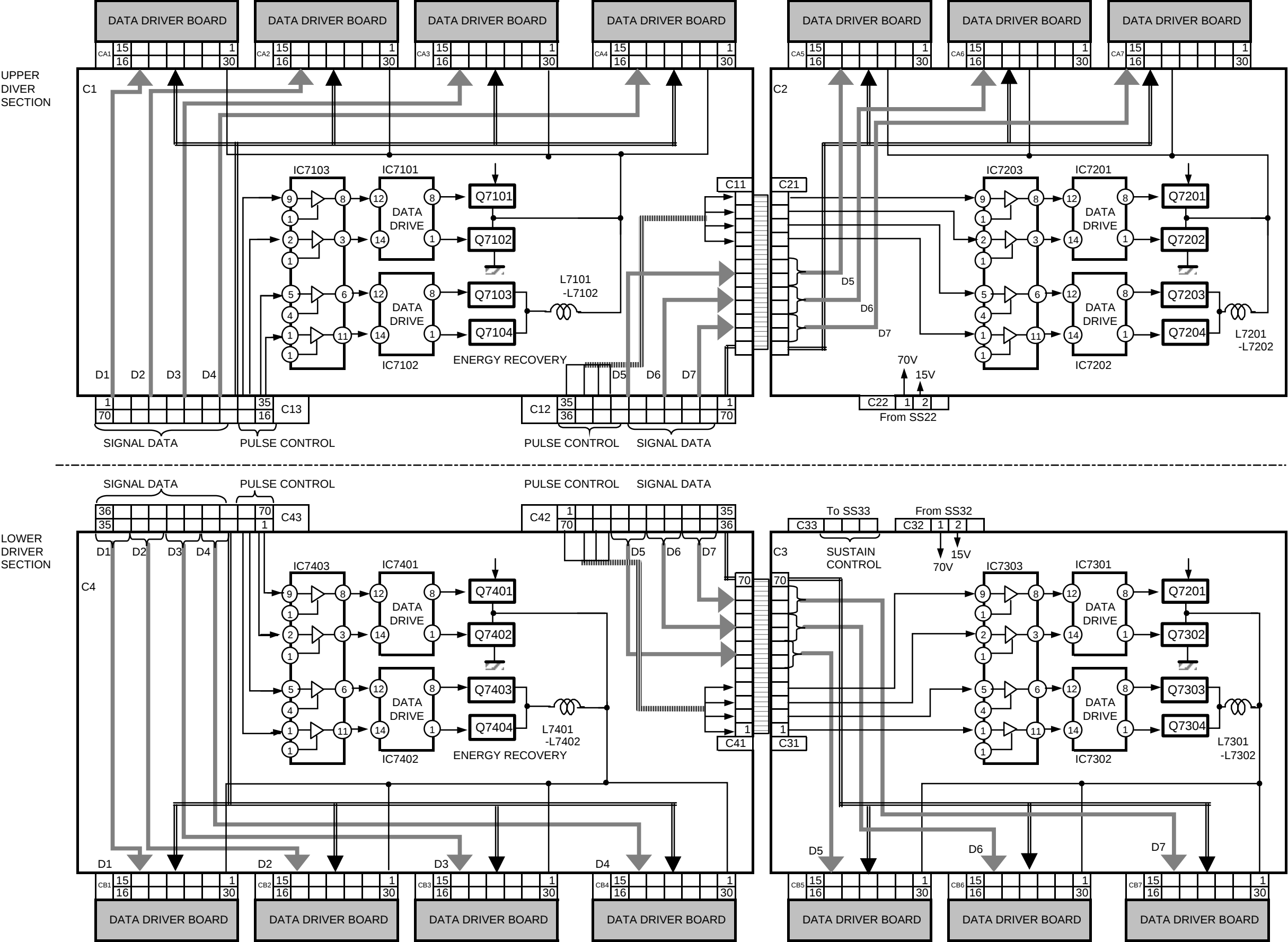








C1,C2,C3 and C4 Board Block



6

5

4

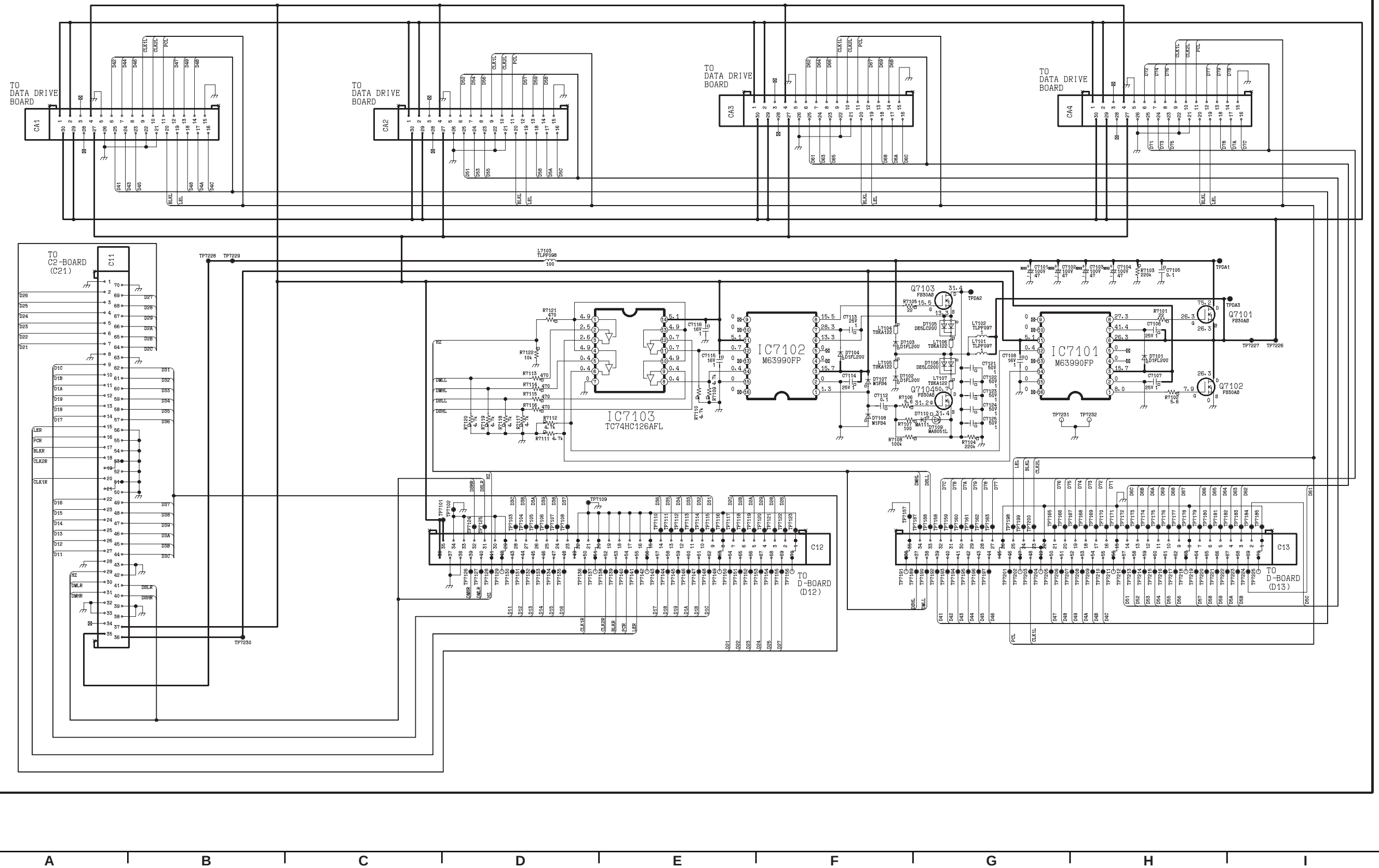
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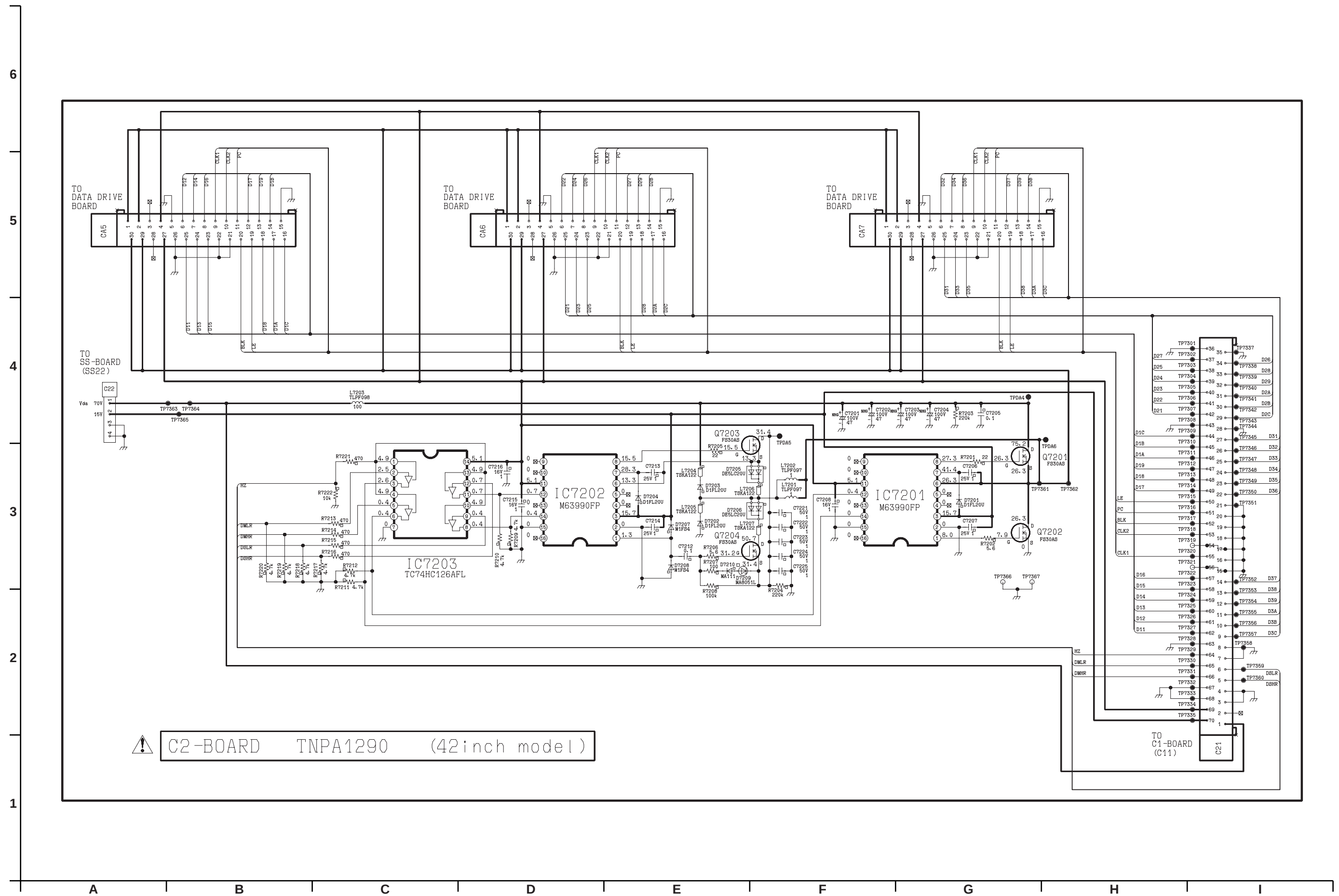
2

1



C1-BOARD TNPA1289 (42inch model)





6

5

4

3

2

1

A

B

C

D

E

F

G

H

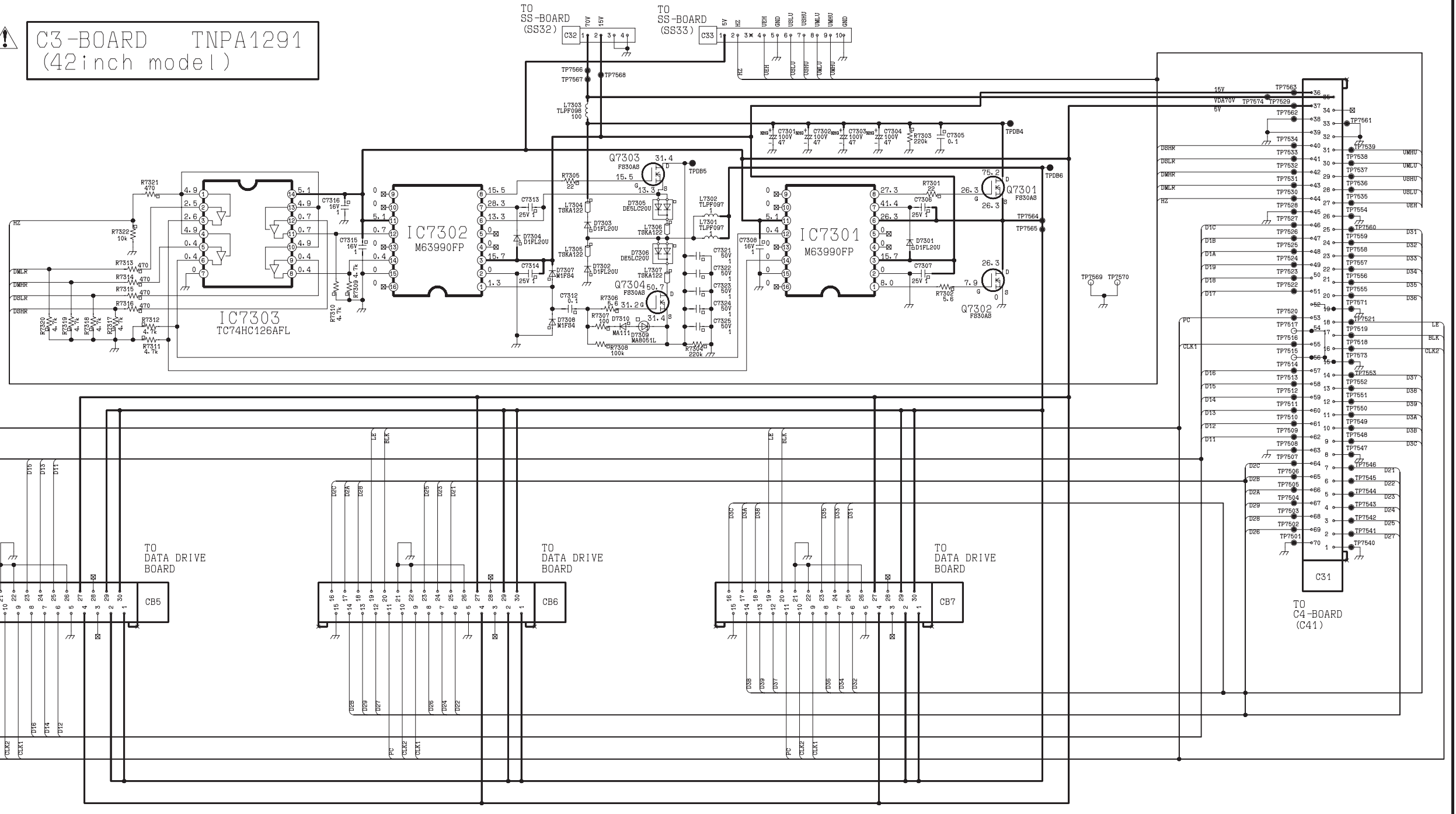
I



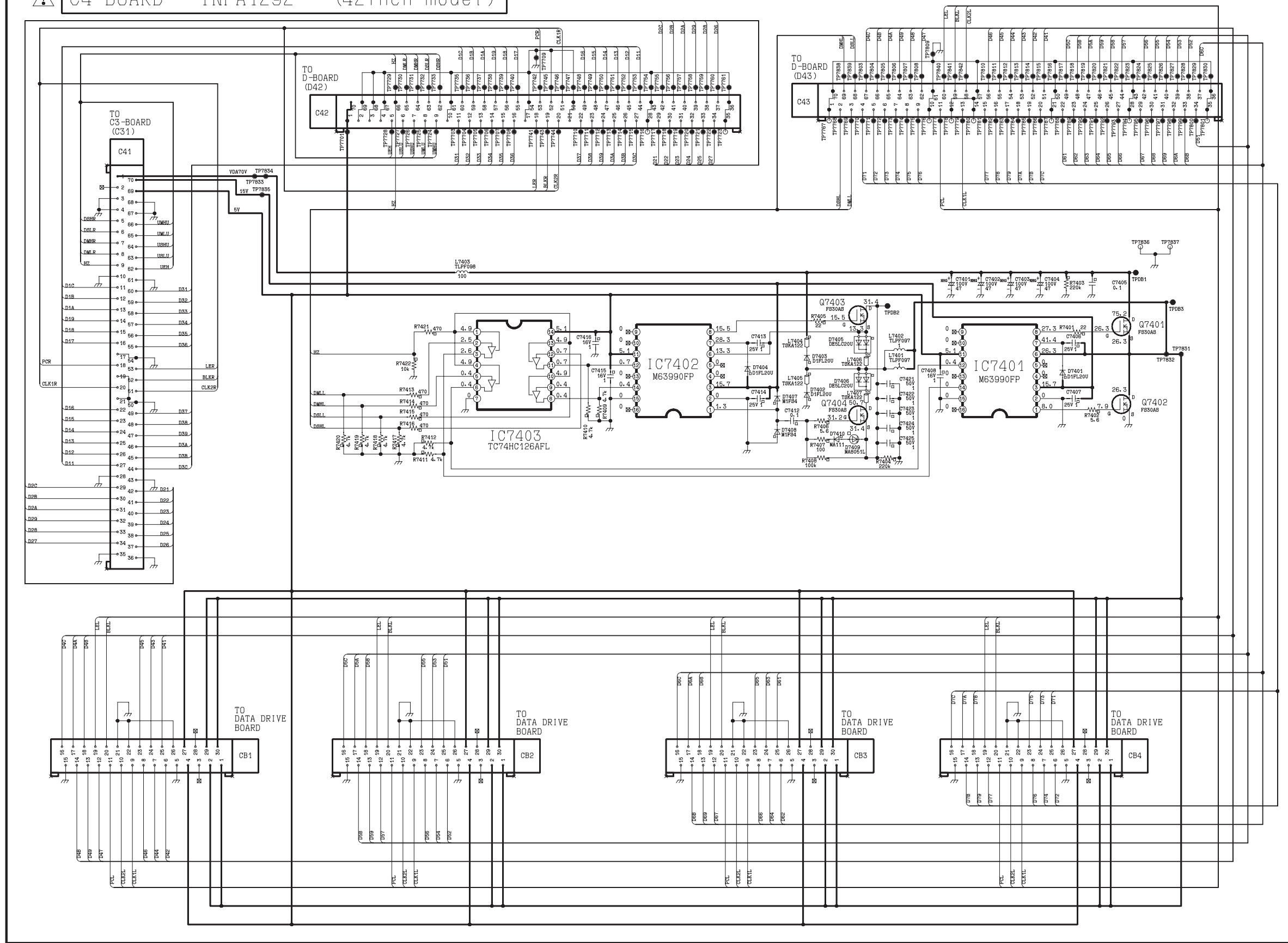
C3-BOARD TNPA1291
(42inch model)

TO
SS-BOARD
(SS32)

TO
SS-BOARD
(SS33)



⚠ C4-BOARD TNPA1292 (42inch model)



6

5

4

3

2

1

A

B

C

D

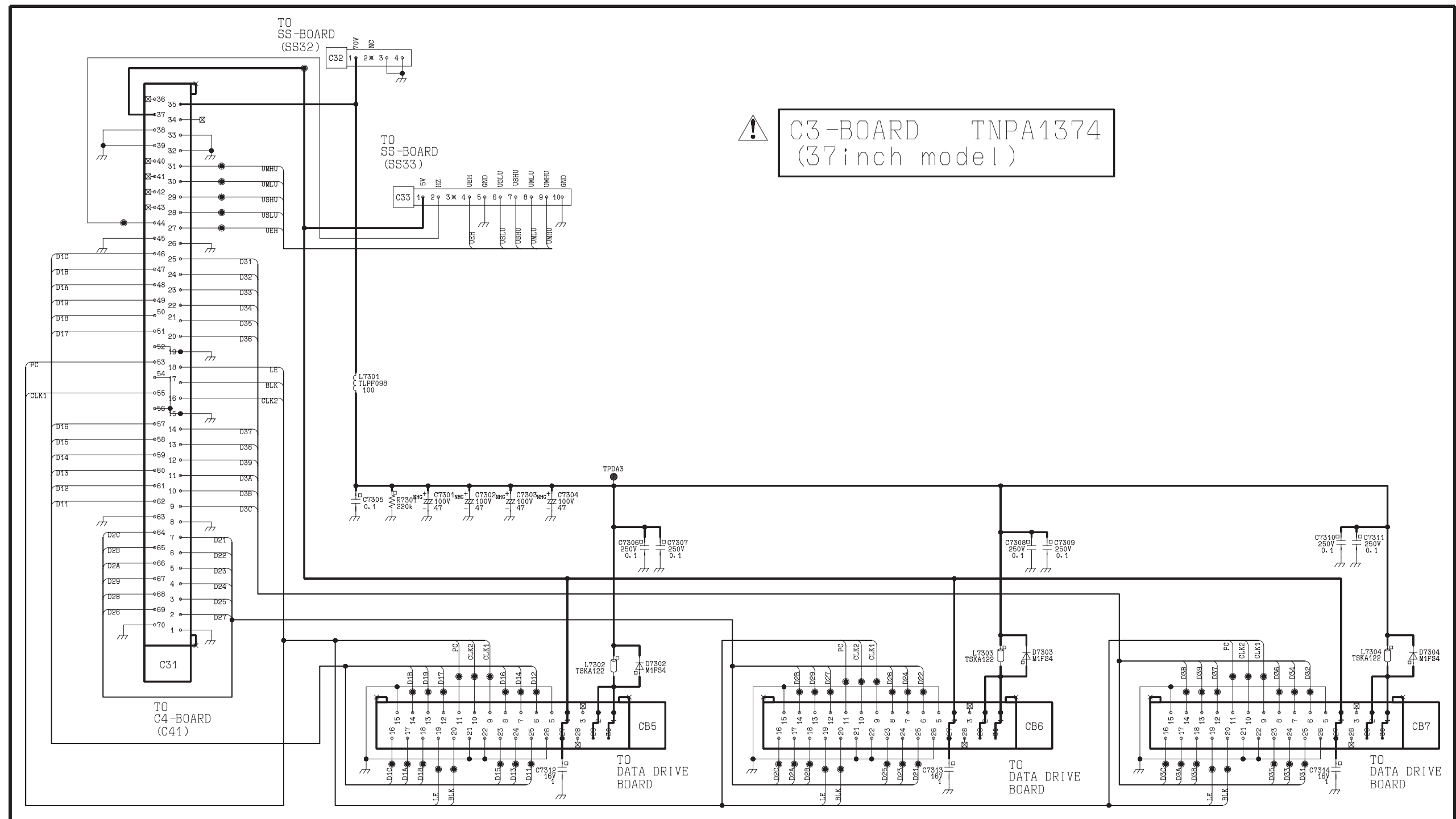
E

F

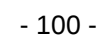
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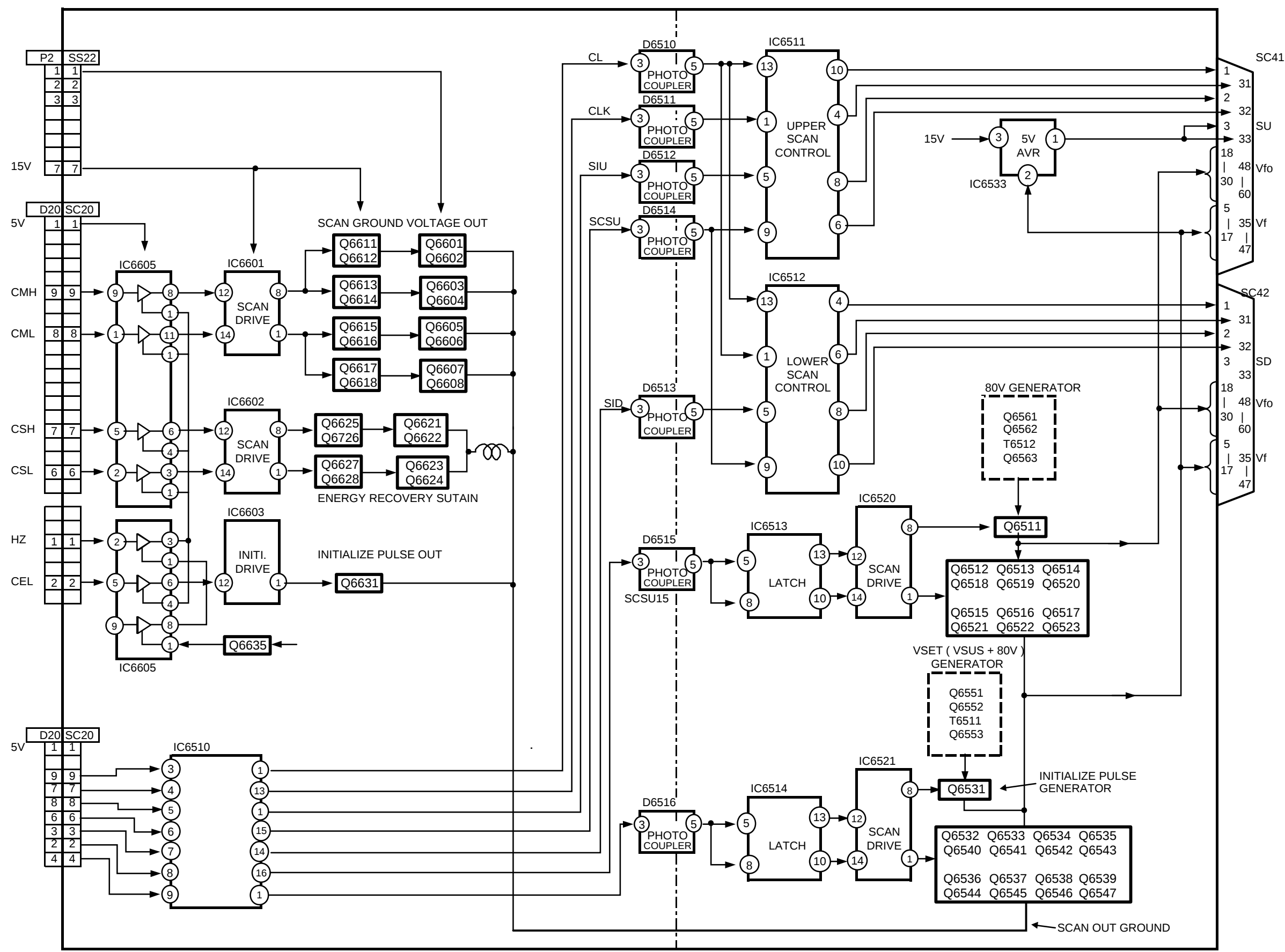
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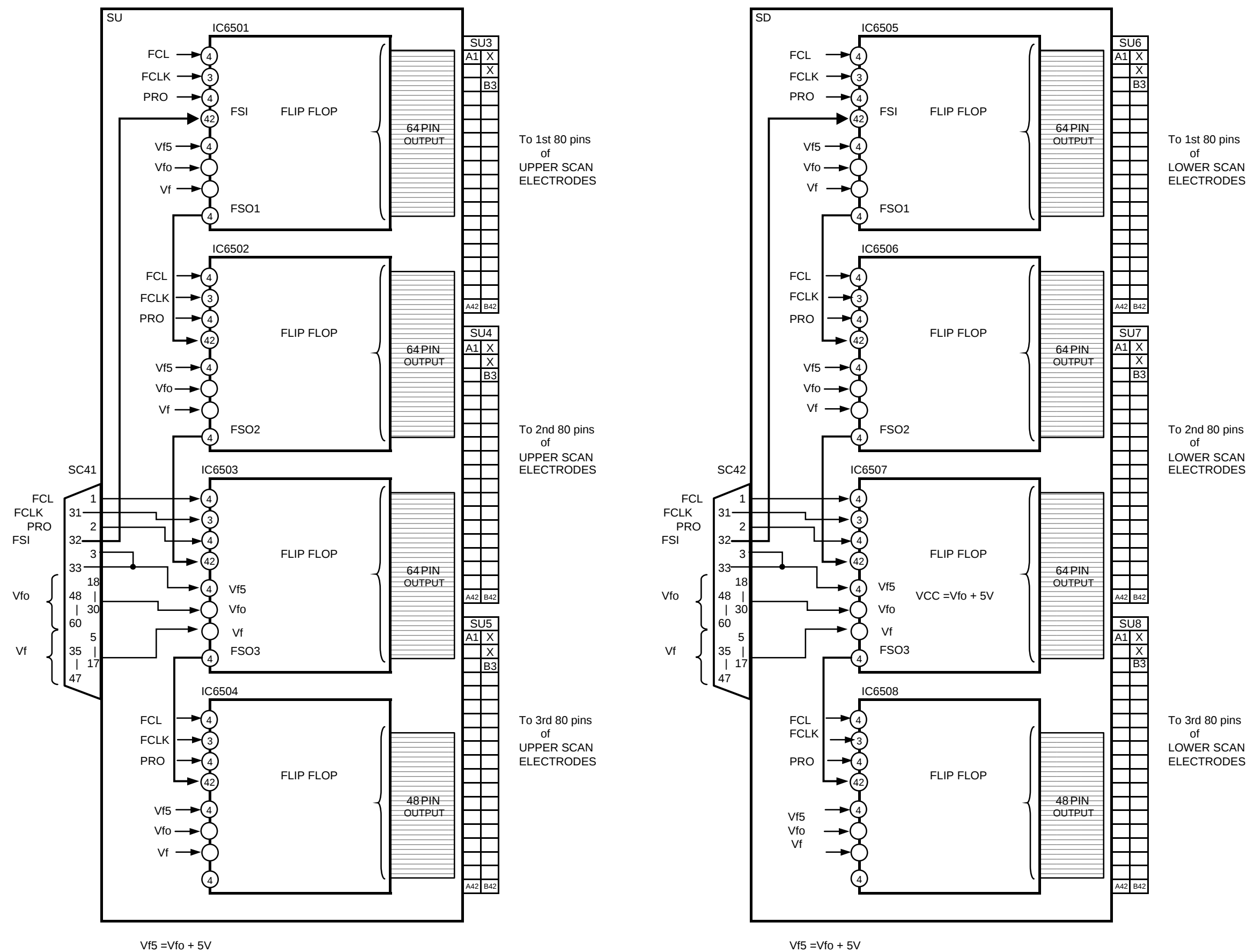
C3-BOARD TNPA1374
(37 inch model)



SC Board Block



SU and SD Board Block



6

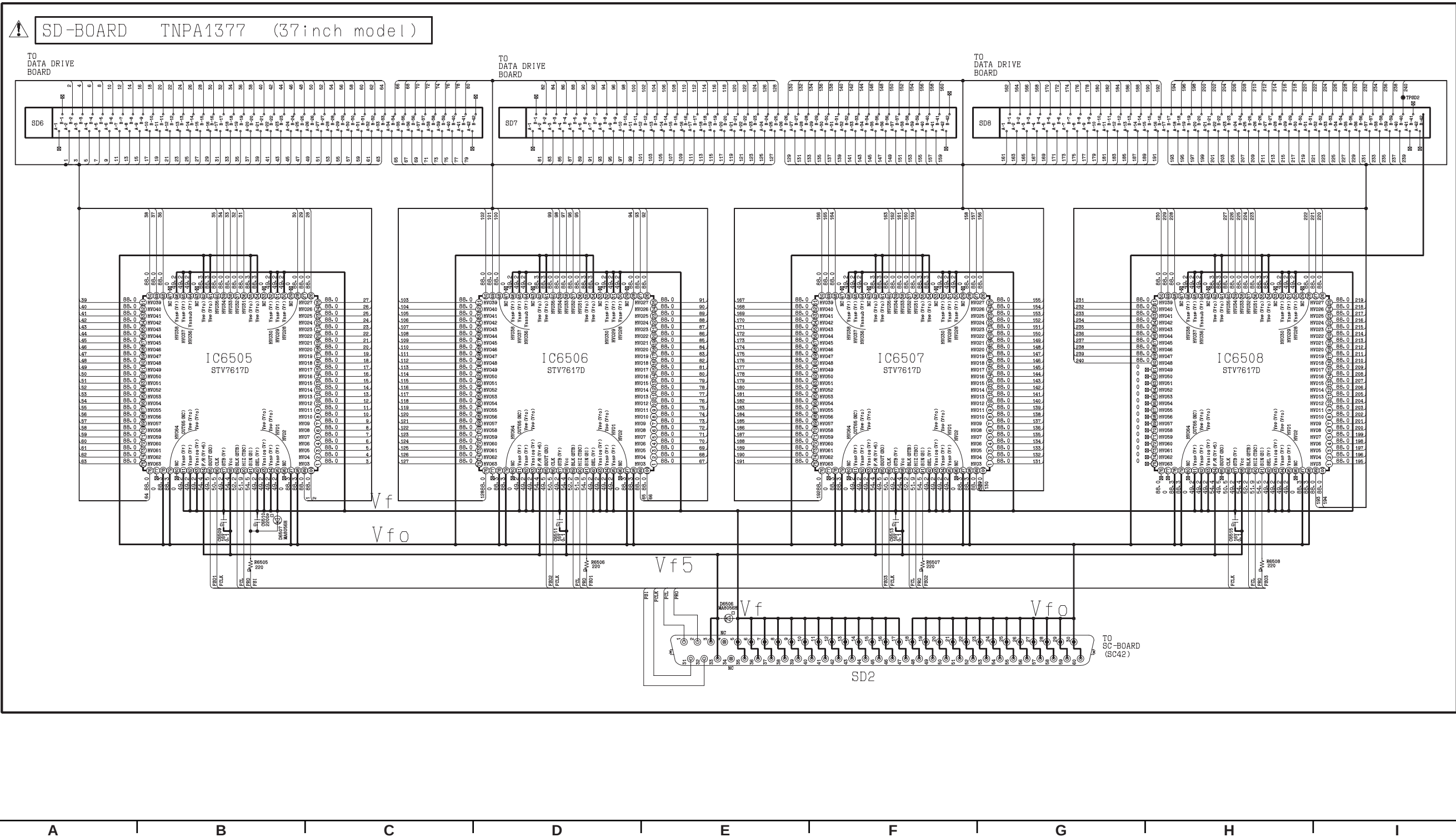
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6

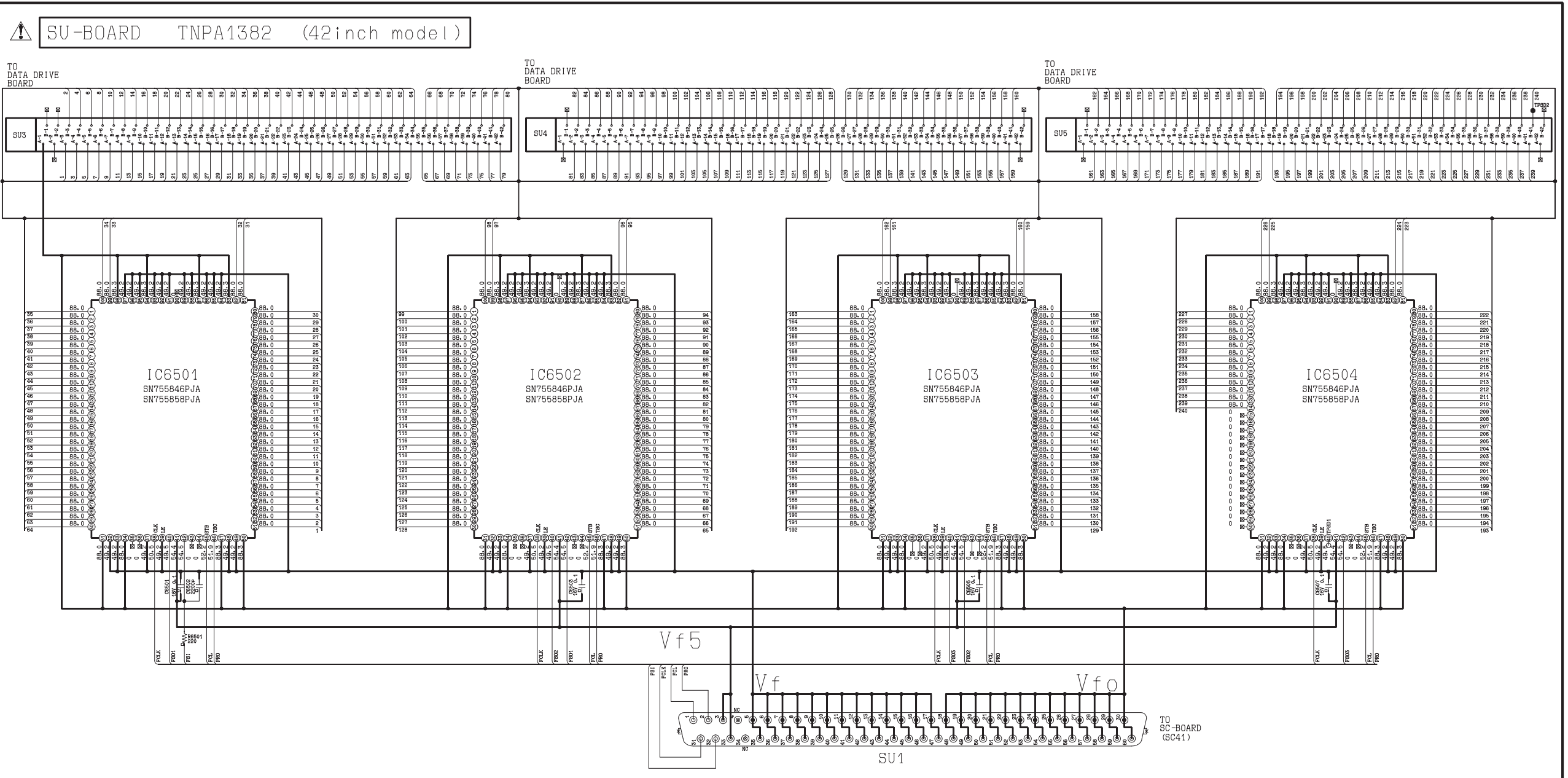
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6

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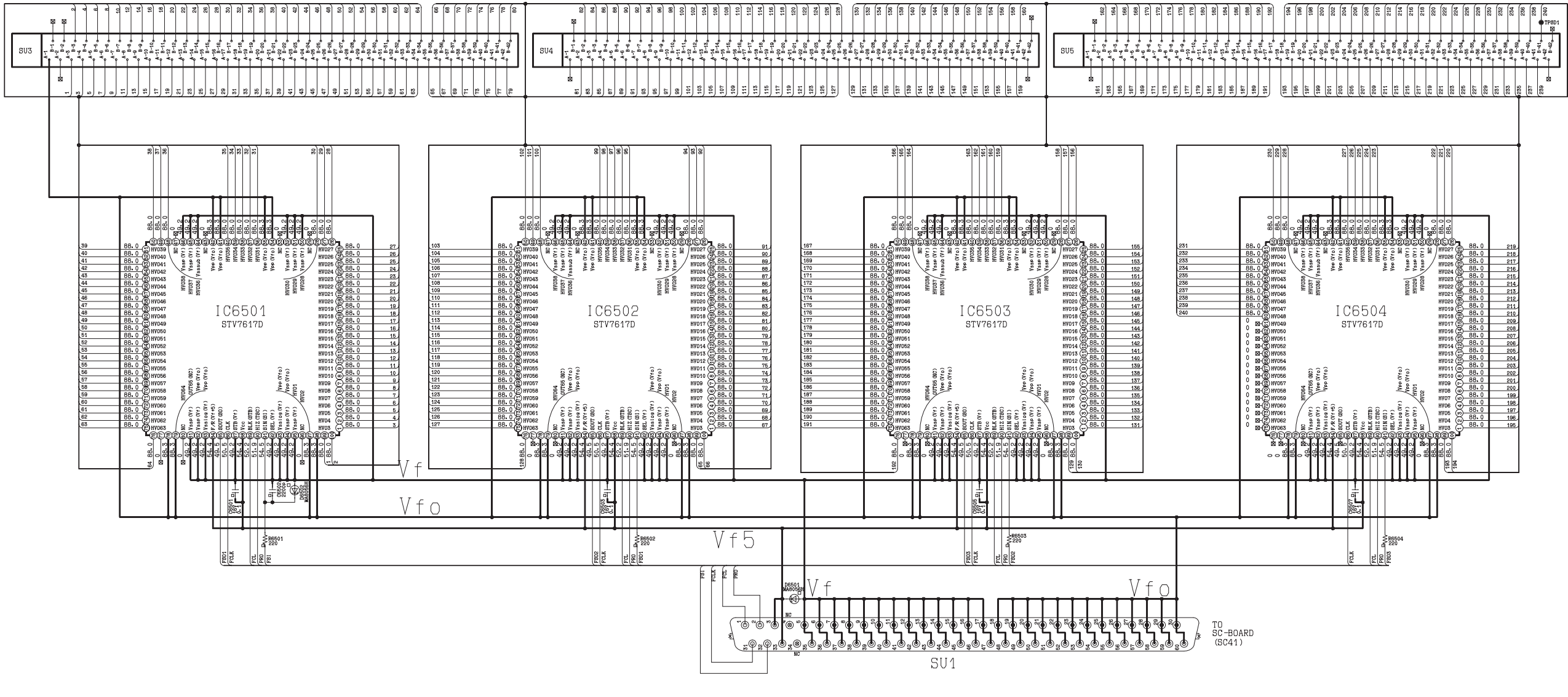
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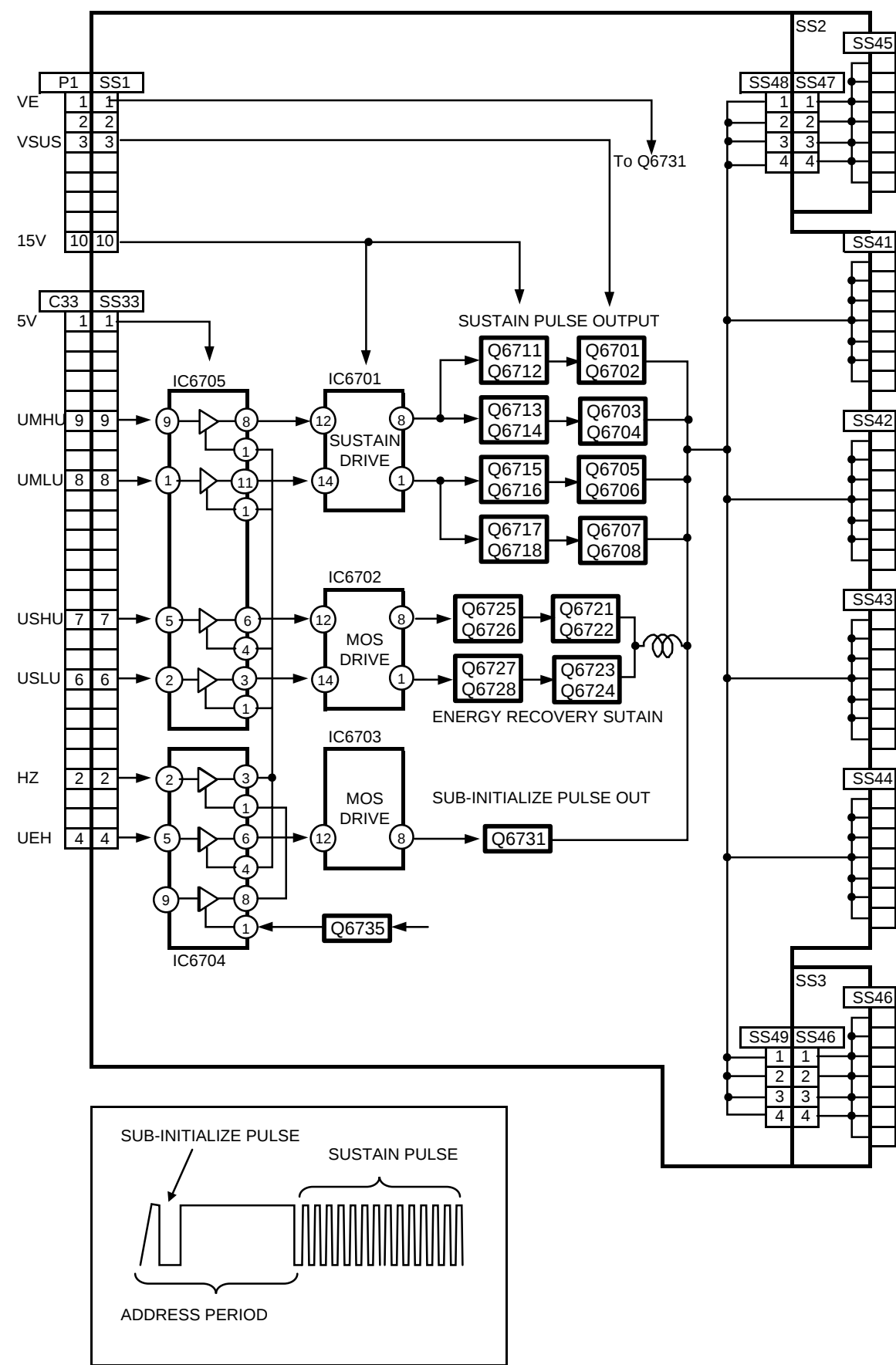
⚠ SU-BOARD TNPA1376 (37inch model)

TO DATA DRIVE BOARD

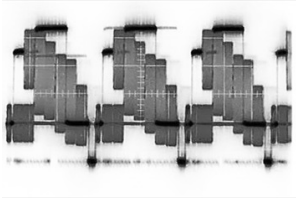
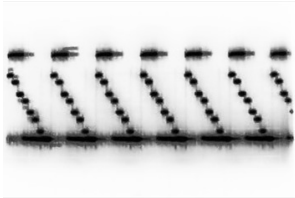
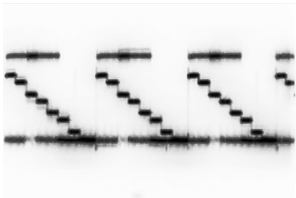
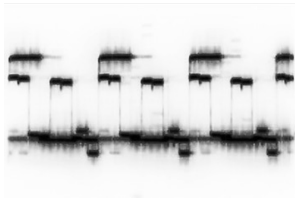
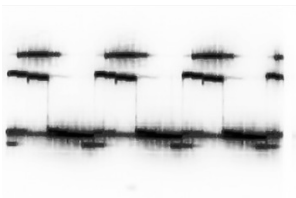
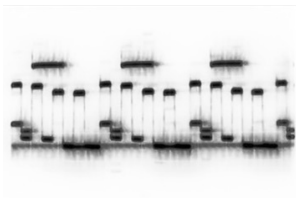
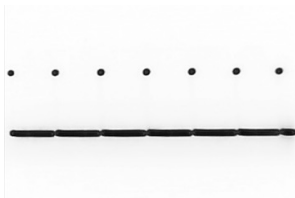
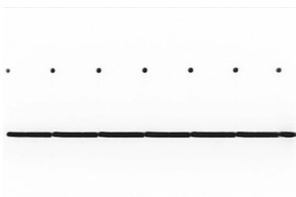
TO DATA DRIVE BOARD

TO DATA DRIVE BOARD





Signal Waveform

PIN A7 OF DS CONNECTOR (HG BOARD)  0.1 Vp-p (20μsec) MAIN-Y/ CVBS	PIN A30 OF DS CONNECTOR (HG BOARD)  0.7 Vp-p (5μsec) B OUT (DS PB)	PIN A32 OF DS CONNECTOR (HG BOARD)  0.6 Vp-p (20μsec) G OUT (DS Y)
PIN A34 OF DS CONNECTOR (HG BOARD)  0.6 Vp-p (10μsec) R OUT (DS PR)	TP216 (HG BOARD)  0.6 Vp-p (10μsec) Y	TP293 (HG BOARD)  0.7 Vp-p (10μsec) R
TP294 (HG BOARD)  0.7 Vp-p (10μsec) G	TP295 (HG BOARD)  0.6 Vp-p (10μsec) B	PIN1 OF H2 CONNECTOR (HG BOARD)  2.0 Vp-p (20μsec) HD
PIN3 OF H2 CONNECTOR (HG BOARD)  2.4 Vp-p (10msec) VD	PIN5 OF H2 CONNECTOR (HG BOARD)  2.4 Vp-p (20msec) CLP	

*Signal : PAL. composite. signal.

Setting: IIC mode-Aging-Panel Color-White (0)

